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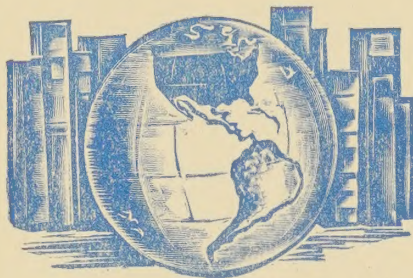
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# MODERN GREENHOUSE CONSTRUCTION.



## HITCHINGS & CO.,

(ESTABLISHED 50 YEARS.)

233 MERCER STREET,  
NEW YORK.

HEATING AND VENTILATING CATALOGUES SENT ON APPLICATION.





# HITCHINGS & CO.,

(ESTABLISHED 50 YEARS)

## HORTICULTURAL ARCHITECTS AND BUILDERS

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COMMERCIAL ROSE AND GREEN HOUSES

ALSO

CONSERVATORIES, PALM HOUSES, VINERIES, ETC.

STRUCTURAL IRON WORK FOR HORTICULTURAL BUILDINGS.

IRON BENCH FRAMES FOR SLATE OR TILE TOPS.

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EDWARD W. HITCHINGS, PRESIDENT.  
CHARLES ARMITAGE, TREASURER.  
THOMAS W. KING, SECRETARY.

## HITCHINGS & CO.

No. 233 MERCER STREET, NEW YORK.

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**FOUNDRIES AND CONSTRUCTION SHOPS**

Occupy block bounded by Garfield and Randolph Avenues, Union Street and C. R. R. of N. J., Jersey City.

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GREENHOUSE HEATING AND VENTILATING CATALOGUE ON APPLICATION.

ESTIMATES OF COST, SKETCHES AND INFORMATION FURNISHED.

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In writing for estimates state the probable dimensions of the structure or structures to be erected, the location of same, and general grade of the land, also the purposes for which they are intended, whether for Conservatory, Palm, Rose or General Green House, and whether for Commercial or Private use. If Graperies, state whether for early or late crops.

On receipt of above information, we will be pleased to furnish estimates of cost for the structure complete, ready for planting, or for the Structural Iron Work, Heating and Ventilating Apparatus, shipped ready for erection, with plans, details and full instructions to enable the local mechanics to erect same.

34588H



THE increasing demand for flowers and foliage plants of a higher grade than have been produced in the past, creates the necessity for a corresponding change and improvement in the construction and durability of the glass structures devoted to their production.

It is not many years since that the first consideration in the building of such structures was the cost ; and the durability, lightness and adaptability to the purpose in view were secondary matters. The average greenhouse was constructed with heavy wooden rafters and purlins, and with sash bars only eight or ten inches apart, thus greatly obstructing the direct rays of the sun, which are so vitally necessary to the perfect development of plants and bloom in general. But improvements have been made from time to time, until to-day we are using iron rafters one-half by two inches, with angle iron purlins, and narrow wooden glazing bars, spaced for glass sixteen inches wide, thus allowing an almost unobstructed passage of the sun's rays ; posts, columns, gutters and sills are also of iron, thus adding greatly to the durability and strength of the structure.

The cuts on the following pages show clearly the construction and arrangement of our Standard Iron Frame Houses, and are well worthy of the closest consideration by all interested in Greenhouse or Conservatory building.

On page 6 is shown a section of a three-quarter span house. This class of house is intended more especially for roses, and is built with the long sloping roof facing the south, in order to secure the best results from the average winter sun ; this house is shown with wood side (so constructed with a view of economy in first cost) and is such as is used universally by the commercial grower.

On page 7 we show a three-quarter span commercial rose house, as described above, with the addition of a lean-to propagating house on the north side ; this small house also serves well for a fern house or a cool orchid house.

The cut on page 8 is similar to that on page 6, but with brick foundations, and is better adapted for private estates.

On page 9 we show a section of an even-span house, with wood sides, which is usually built with its length extending north and south. This style of house is well adapted for general greenhouse purposes, and its benches are all easily reached from the ground level.

On page 10 we show the arrangement of an even-span house known to the trade as "Ridge and Furrow." The object of this arrangement is to economize space, cost of construction and working expenses. Such houses are placed with their length running north and south, and in this position, in consequence of the exceeding light construction of the roof, receive full benefit of the sun's rays. A great objection to such an arrangement has been heretofore the fact that snow would accumulate in the furrow between the roofs, and cause damage to the houses ; this objection is, however, entirely overcome by the use of our NON-FREEZABLE CAST-IRON GUTTERS, by which sufficient warmth is radiated to melt such snow as may fall in them. These gutters are 9 inches wide, and a workman can easily walk through them to make any desired repairs to the roof.

The cut on page 11 shows a similar house to that on page 10, but with brick foundations. The cement tank shown in this cut is a very desirable feature in a greenhouse, providing a storage for water at nearly the same temperature as that of the house, which is an absolute necessity for the successful growth of most greenhouse plants.

On page 12 is shown a section of an even-span greenhouse, with the addition of a straight lantern, which adds materially to the outward appearance. The Cold Frame or Hot Bed shown on the side of this house is a valuable addition, being eminently suited for the growth of violets, vegetables, lettuce, etc., and is also very useful for the hardening of bedding plants in early spring.

The cut on page 13 shows a section of a Curvilinear Palm House, with curvilinear lantern. Such houses are made of all heights, from 18 to 75 feet. Houses of this description require such a large number of heating pipes to produce the desired warmth, that, in order to more evenly distribute the heating surface, it is advisable to place a portion of them in trenches below the walk, and cover them by strong, neat, cast-iron gratings. These gratings have two good points—firstly, they allow a free circulation of the warm air; and, secondly, they always afford a clean, dry walk.

On page 14 we show a section of a lean-to Grapery or Fruit House. The front or south wall of such a house may be built on arches, which allow the vines to pass into the house from the beds prepared for them on the outside. It is more usual, however, to build this wall solid, extending the foundations deeper than generally made, and plant the vines entirely within the house. In this case the piers for the support of the heating pipes and the piers supporting the iron grating walk are carried down to a sufficient depth to pass below the prepared soil. In such a house it is desirable to furnish vapor pans on the heating pipes to develop sufficient moisture to produce perfect and well-formed fruit.

The upper cut on page 15 shows a very useful house for private estates, being of the Standard Iron Frame construction, on brick foundations. The width of such a house is usually about 10 feet, giving ample bench room on each side, with a central pathway. This house is well suited for lettuce, cucumbers and vegetables, also for bedding stock and violets.

The lower cuts on page 15 show the details of construction at the ridge and eaves of a house with wooden posts and iron roof frame. This style of house is largely built by commercial growers who prefer to do their own work, they procuring the roof frame work from us.

On page 16 are shown large scale cuts of our improved iron posts and their connections. The entire frame, from rafter to ground, including bearings for ventilating shaft, supports for bench frames, etc., is cast in one piece, thus producing a very rigid construction, of an exceedingly neat appearance. The Cut No. 1 shows this post in connection with our PATENT NON-FREEZABLE CAST-IRON GUTTER. Cut No. 2, of a similar style, with gutter 9 inches wide, as used for the furrow between connecting houses. This gutter is wide and strong enough to enable men to walk through when painting or repairing the roofs. With these gutters we obviate the very objectionable features of their becoming filled with ice in winter, and overflowing or allowing the water to freeze up on to and break the glass, as they are so constructed that a sufficient amount of the heat from the interior of the greenhouse is radiated through the metal to prevent their contents becoming frozen. Cut No. 3 shows the above-described post in connection with a house without gutters, when it is not desired to collect the rain water from a greenhouse roof. This construction can be adopted with great advantage, as the shadow thrown on the plants by the gutters and their connections is obviated, thus causing the front bench, which generally produces a very secondary grade of bloom, to be equal to those in any other part of the house.

On page 17 are shown details of our improved Iron Bench Frames, as arranged for drainage tile, or other bottoms. Benches constructed in this manner are practically indestructible, and are of an unexceptionably neat appearance. They may be easily arranged for any style of new or old houses, and readily set up by any ordinary mechanic.

On page 18 we show a longitudinal section of our Standard Iron Roof Frame between rafters, showing the relationship between rafters, purlins, glazing bars and glass; also a cut of our cast-iron floor grating, as used over trenches in which heating pipes pass under walks, or as used for walks in graperies, etc. This pattern is sufficiently open to allow of a free circulation of air, and of ample strength to sustain any weight which would be brought to bear upon it. It is cast of any width to order, with such flanges on its edges as are requisite for its support. We also show on this page



our standard pattern of greenhouse cresting. This cresting is made of several heights, from 5 inches up, with suitable finials. We also make other special patterns for large palm houses, etc.

On page 19 we show iron columns as used for support of either the rafters, purlins or ridge of the greenhouse. We make a varied assortment of fixed and swivel caps suitable for any style of roof construction. For the base of rafter or purlin columns we show our improved anchor base. These bases are so arranged that they can be buried or anchored in the ground to prevent sudden wind storms from raising the roof, and also so that the columns may be easily screwed in or out of the cap in order to line up the roof at pleasure.

In commercial greenhouses, we show the cast-iron post bases set about two feet and a half below the surface of the ground, to avoid displacement by frost, and about six inches above, to which are securely bolted the posts, either of wrought tee iron or of our improved cast-iron pattern. By this method we prevent the rapid corrosion which takes place when wrought iron is brought in contact with the earth. To these posts the iron rafters are tied by means of the cast-iron brackets; the rafters are again tied at the ridge, with similar brackets, which also carry the ridge and ventilating shafting.

The purlins are of angle iron of special proportions, giving maximum strength and minimum shade; they are fastened to the rafters by malleable knees, to which they are securely bolted; they also support the wood glazing bars, which are held in place by wood screws.

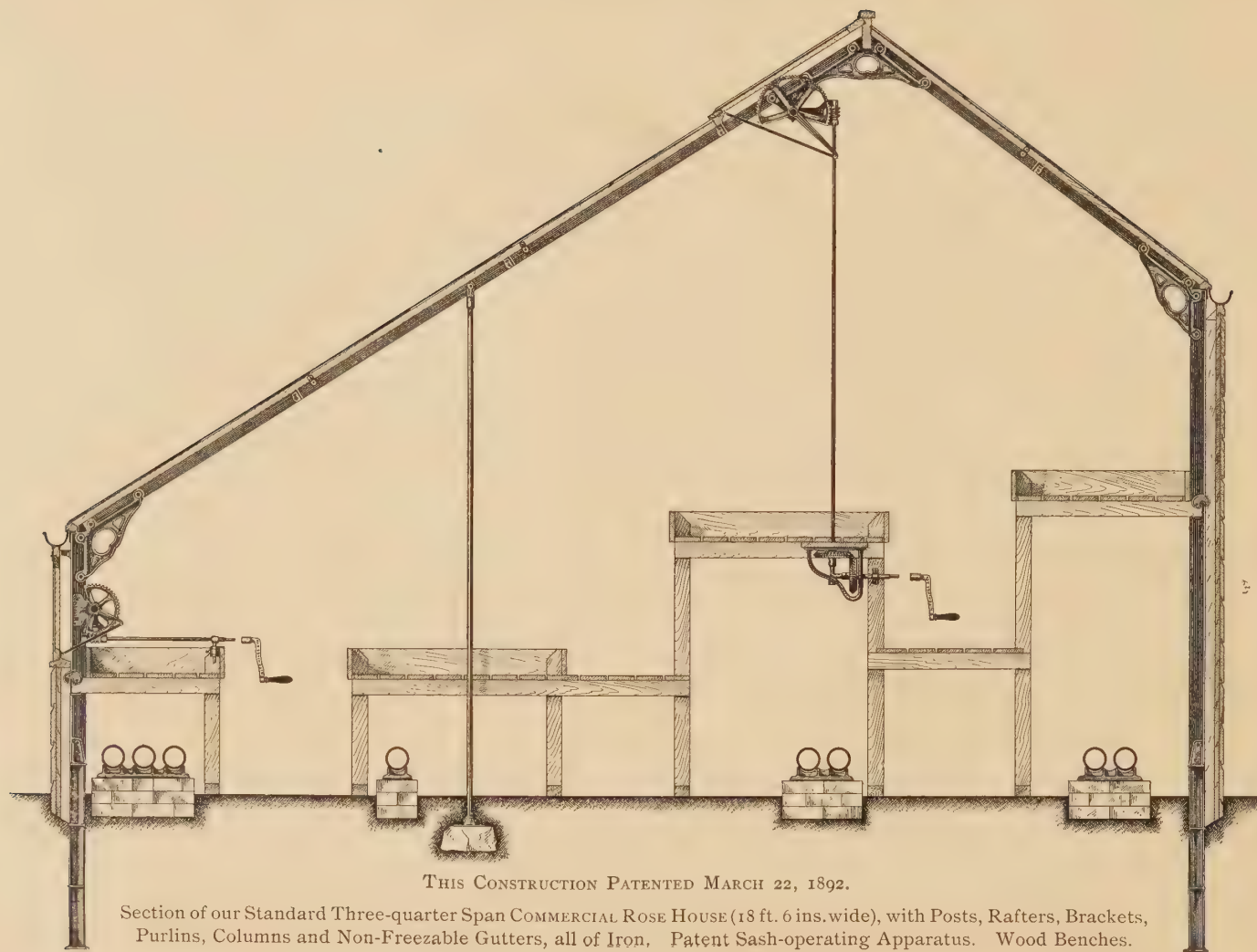
The gutters are of cast iron and so fastened together and connected with the posts as to allow amply for the expansion and contraction due to the variations of temperature, and are so arranged that a sufficient portion of their surface is exposed to the inner warmth of the house to prevent their becoming clogged with frozen water or snow. This is a feature that cannot be claimed for any other gutter.

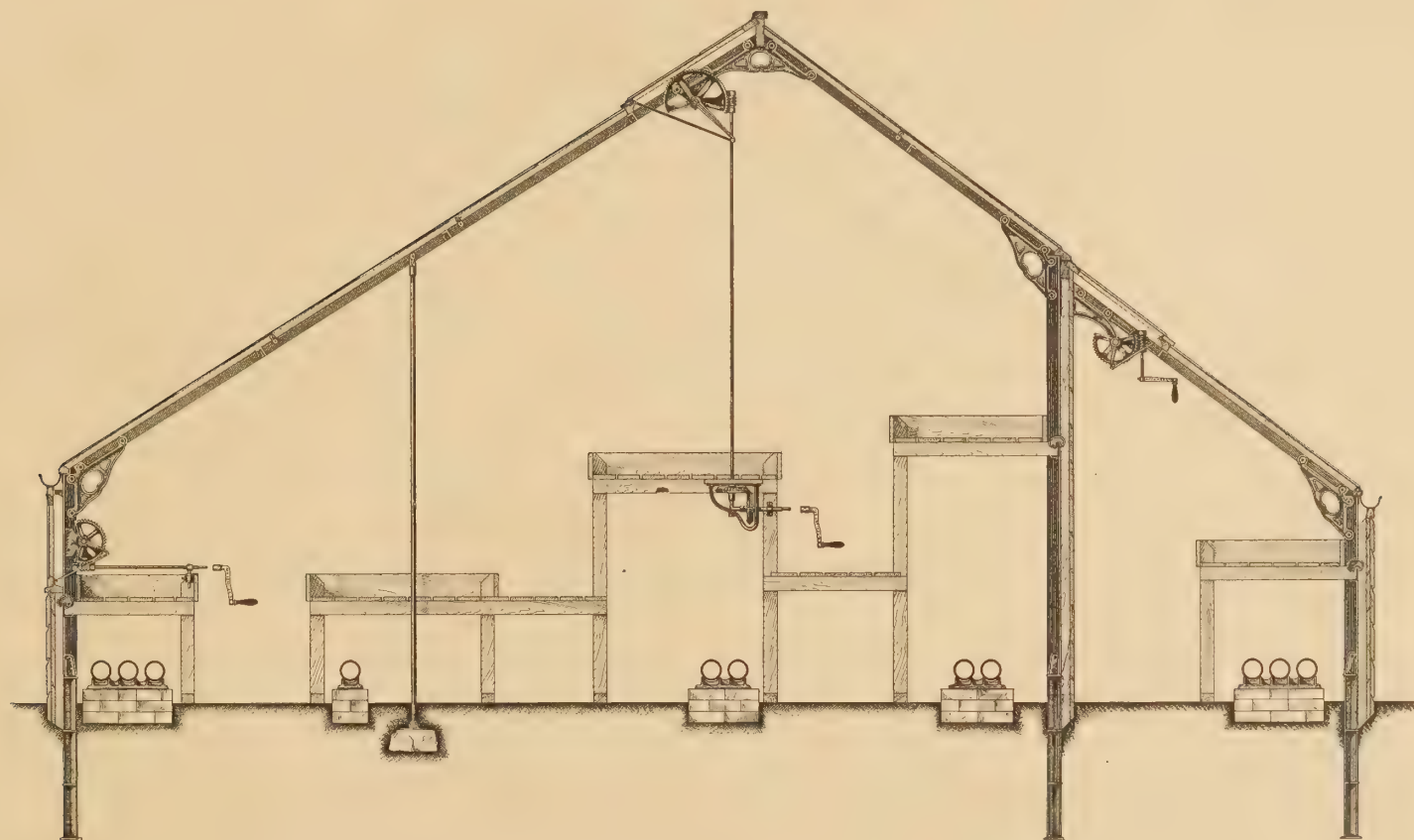
Particular attention is called to the number of purlins used in our construction for the longitudinal bracing of the iron frame; in addition to the usual four lines of angle-iron roof purlins, we furnish, in all standard commercial houses, two on each side, one of which is at the eaves and one just below the sill line; this latter also acts as a back support for the benches. In houses where this feature is omitted, the longitudinal stability of the structure has to depend upon the wood work, and is lost when this becomes defective from decay or other reasons.

The cast-iron sills capping the foundations of brick wall houses are of great strength, and are cast in lengths up to nine feet six inches, with such mitre or tee joint as may be necessary cast on them, thus avoiding the uneven appearance and lack of rigidity which is often seen where these features are not carried out.

It will readily be seen from the above description, that houses of this construction are of great strength and durability, as the most destructible features of the ordinary wooden house are replaced with iron. They are of simple construction and easily erected, the iron frame being complete and fitted ready to be bolted together, before leaving our factory. The ridge, wood glazing bars, ventilating sash and sides are easily attached to the iron frame after erection, and can be readily replaced in future years without disturbing the structure.

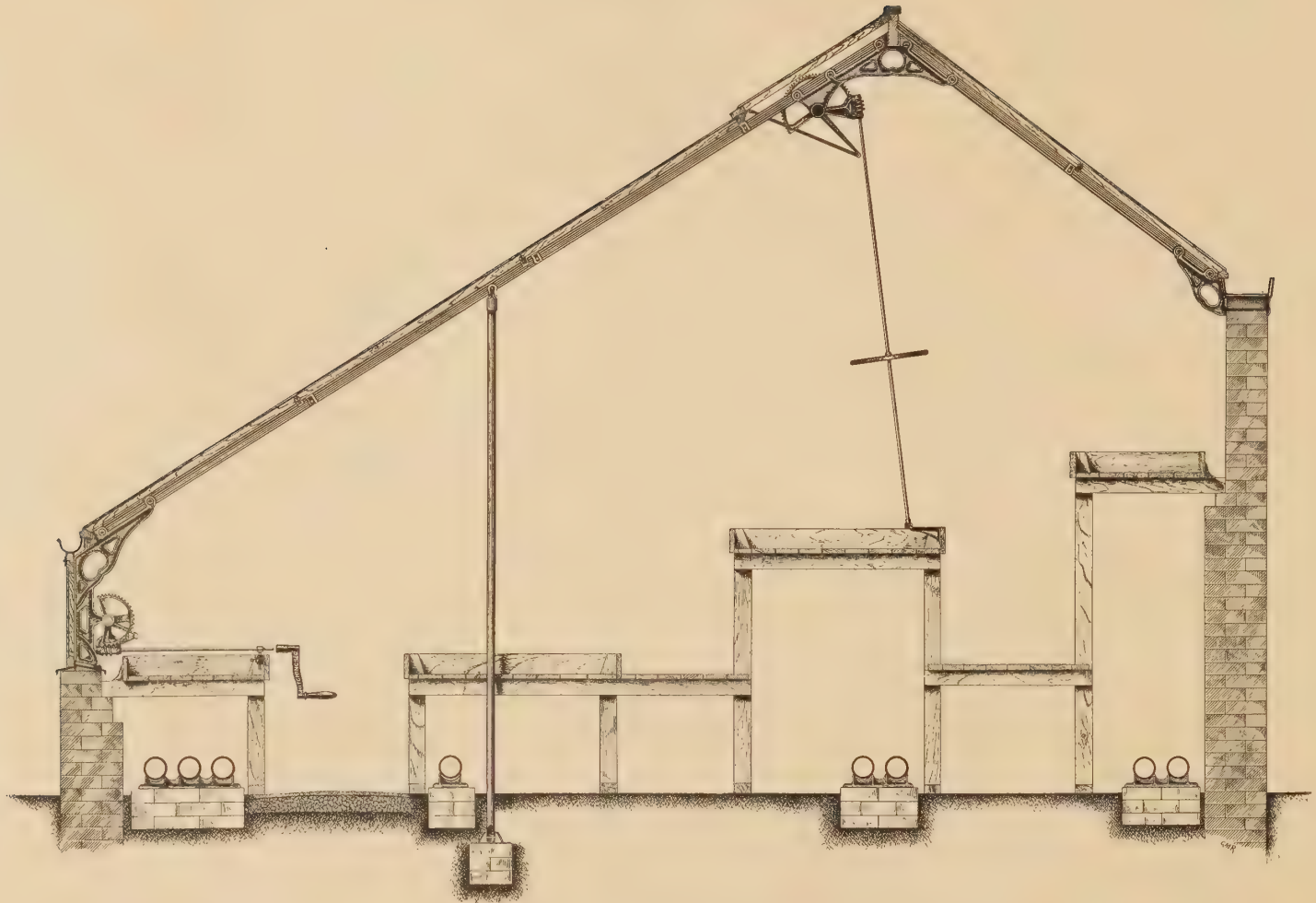






THIS CONSTRUCTION PATENTED MARCH 22, 1892.

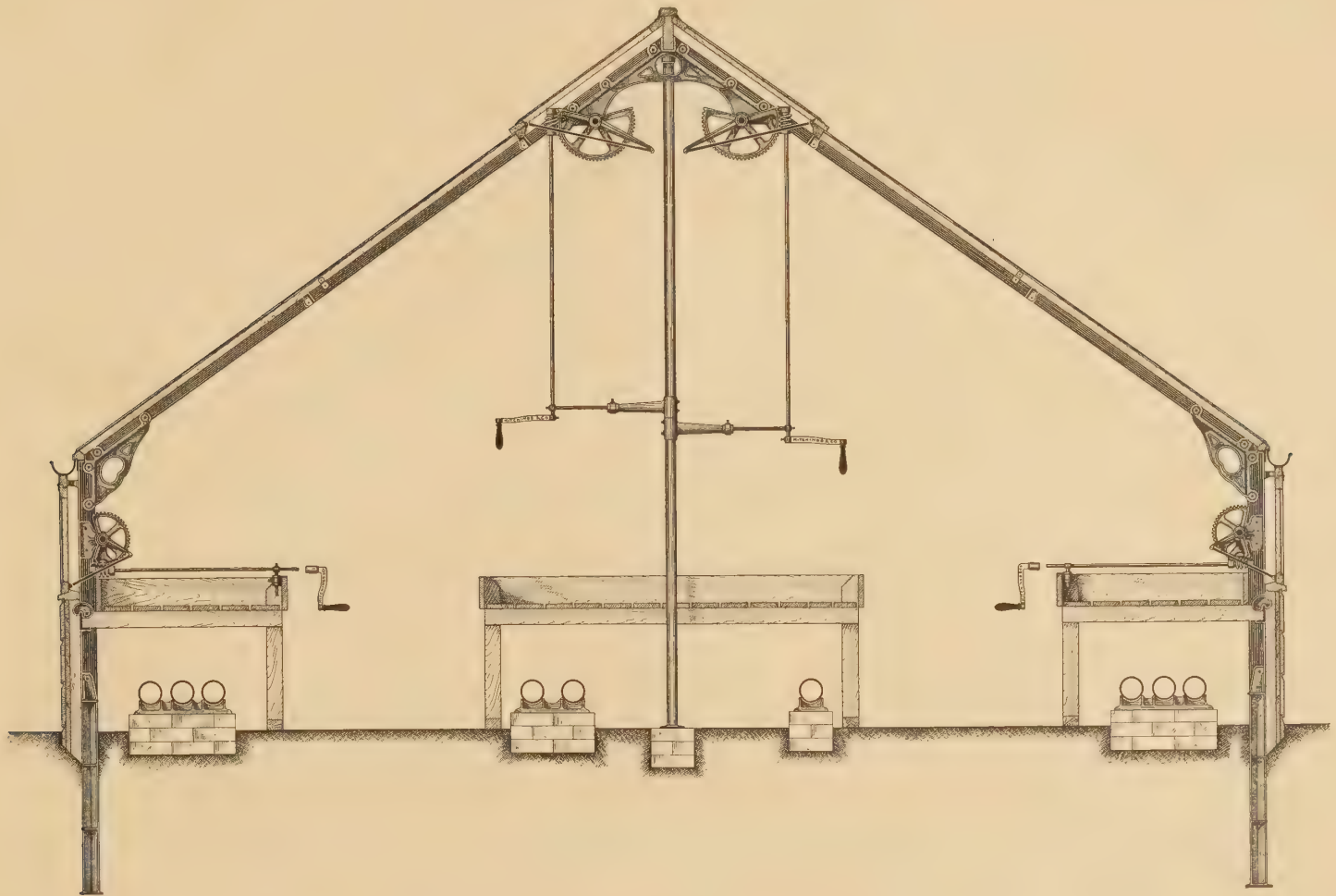
Section of our Standard Three-quarter Span COMMERCIAL ROSE HOUSE (18 feet 6 inches wide), with Lean-to Propagating House (6 feet wide) on north side, with Posts, Rafters, Brackets, Columns, Purlins and Non-Freezable Gutters, all of iron.



CONSTRUCTION PATENTED MARCH 22, 1892.

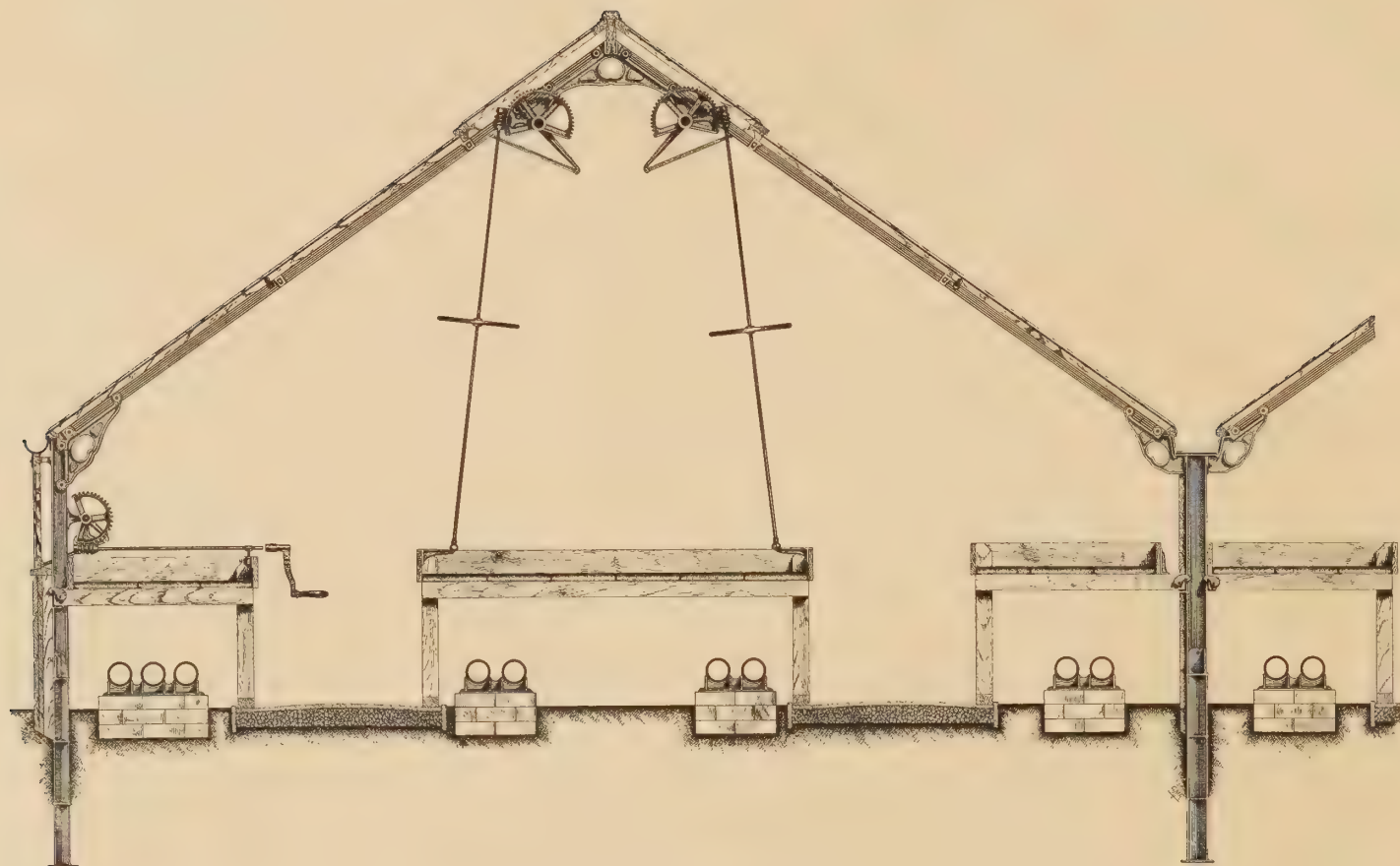
Section of our Standard Three-quarter Span ROSE HOUSE on Brick Foundations (19 feet wide), with Sills, Posts, Rafters, Brackets, Columns, Purlins and Non-Freezable Gutters, all of Iron, also Patent Sash-operating Apparatus.





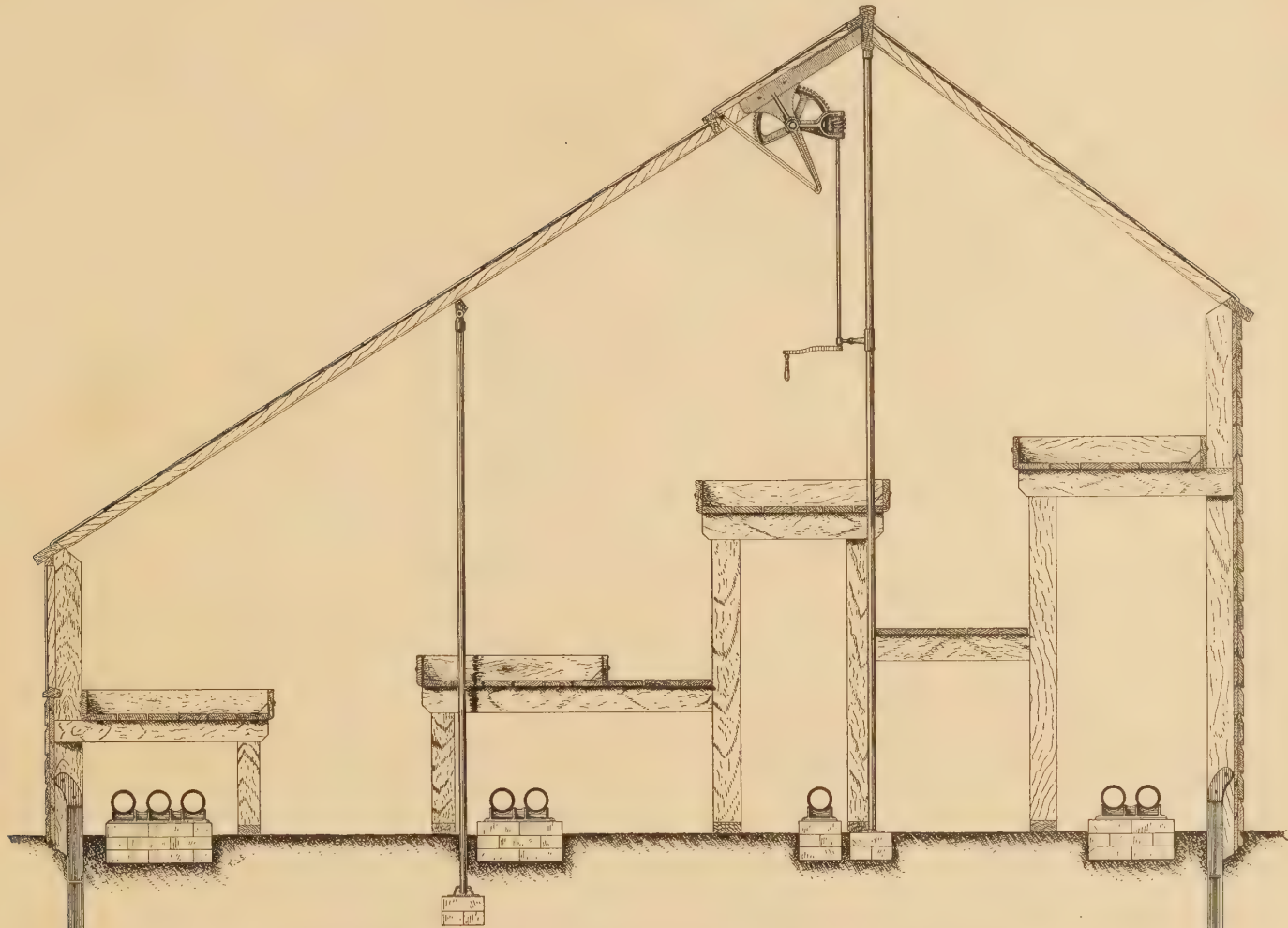
THIS CONSTRUCTION PATENTED MARCH 22, 1892.

Section of our Standard Even-Span COMMERCIAL GREENHOUSE (18 feet 6 inches wide), with Posts, Rafters, Brackets, Purlins, Columns and Non-Freezable Gutters, all of Iron, also Patent Sash-operating Apparatus.



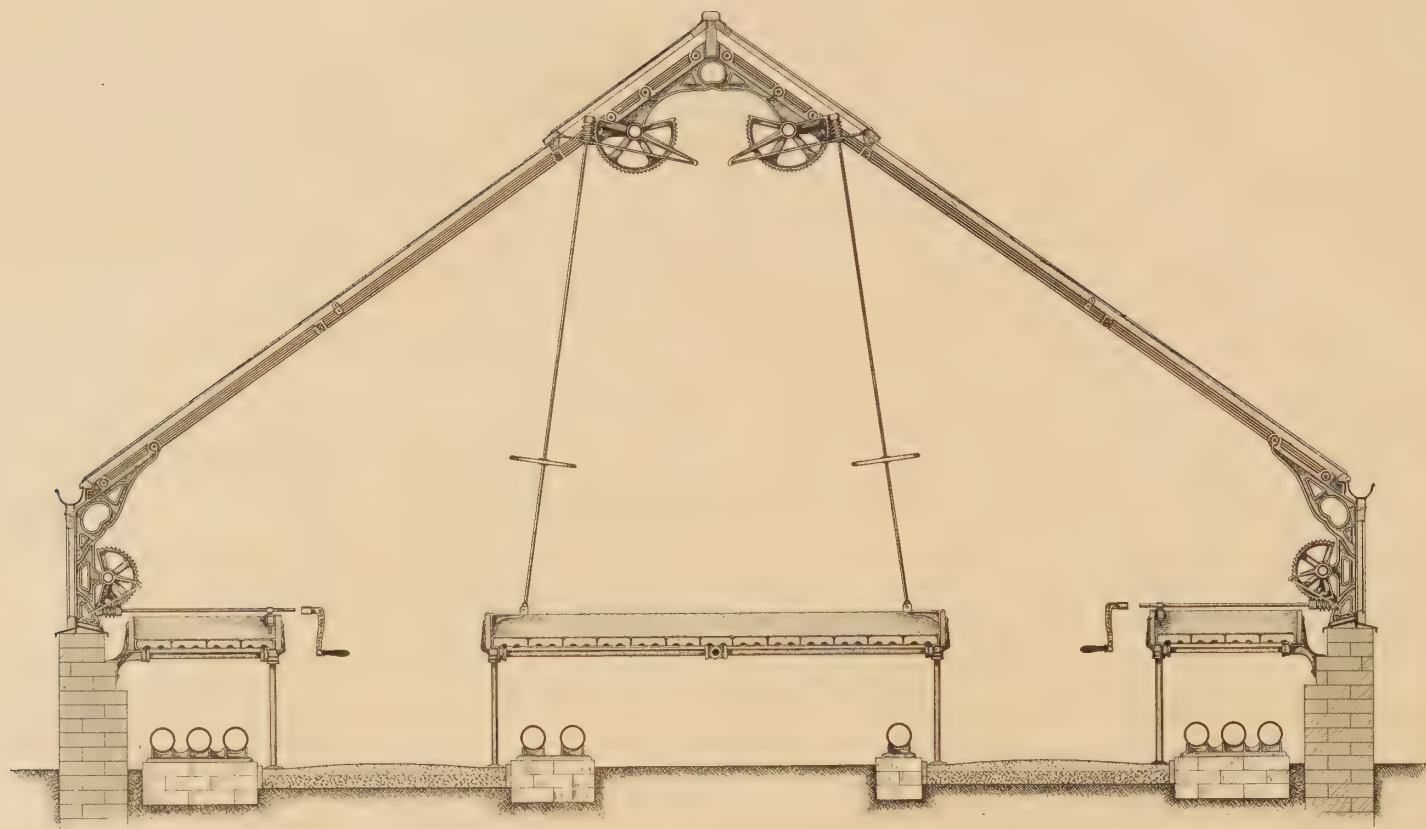
THIS CONSTRUCTION PATENTED MARCH 22, 1892.

Section of our Standard Even-Span "Ridge and Furrow" COMMERCIAL GREENHOUSE (18 feet 6 inches wide), with Posts, Rafters, Brackets, Purlins, Columns and Non-Freezable Gutters, all of Iron, also Patent Sash-operating Apparatus.



Section of Three-quarter Span COMMERCIAL ROSE HOUSE (18 feet 6 inches wide), with Wooden Posts and Sash-Bar Roof construction ; the roof being carried on a continuous Angle-Iron Purlin under the centre of the bars, supported by Iron Columns fitted with adjustable threaded Caps and Anchor Bases ; the Ridge also being supported on similar columns. Such a house can be built at a lower first cost than the foregoing, but we do not advise its use where ultimate economy is desired.

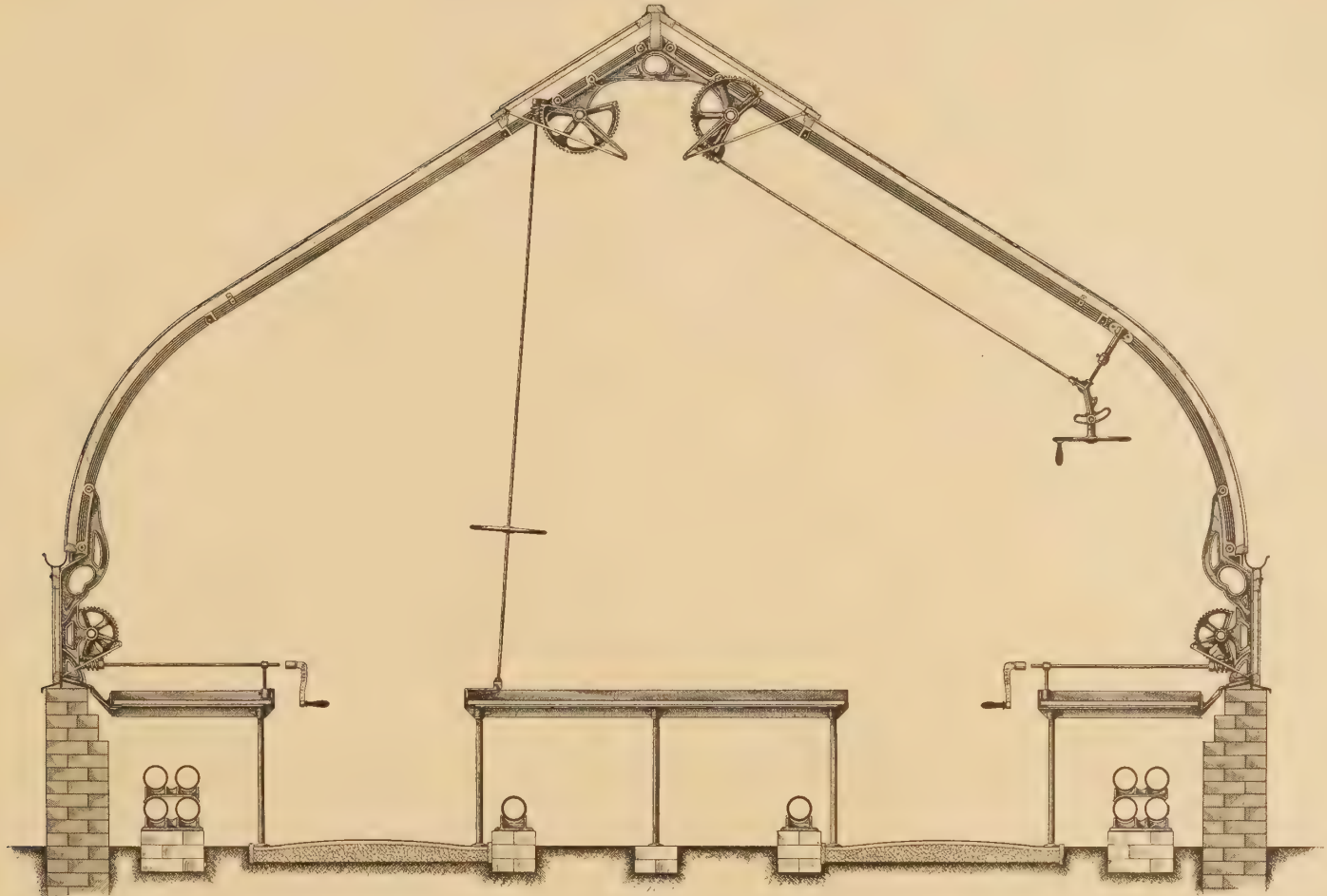




THIS CONSTRUCTION PATENTED MARCH 22, 1892.

Section of our Standard Even-Span GREENHOUSE on Brick Foundations (19 feet wide), with Sills, Posts, Rafters, Brackets, Purlins and Non-Freezable Gutters, all of Iron. Iron Bench Frames with Tile Bottoms, also patent Ventilating Apparatus.

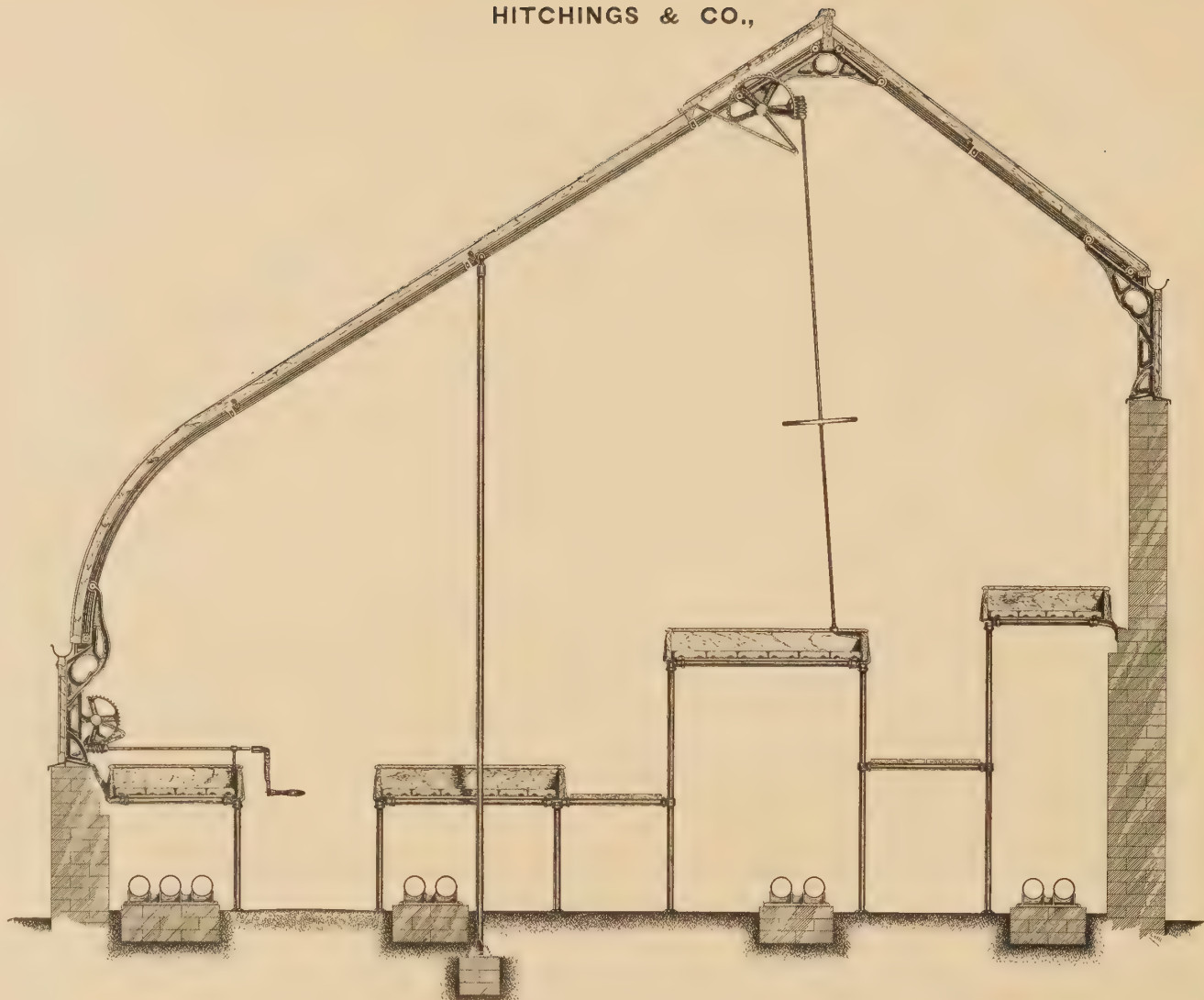
This style of house is eminently suited for private estates, where a neat, economical and perfect structure is desired.



THIS CONSTRUCTION PATENTED MARCH 22, 1892.

Section of our Standard Even-Span Curvilinear GREENHOUSE on Brick Foundations (19 feet wide), with Sills, Posts, Rafters, Brackets, Purlins and Non-Freezable Gutters, all of Iron. Iron Bench Frames with Slate Bottoms, also patent Ventilating Apparatus. This style of house is eminently adapted for use on private estates for growing small Palms and Exhibition Plants.

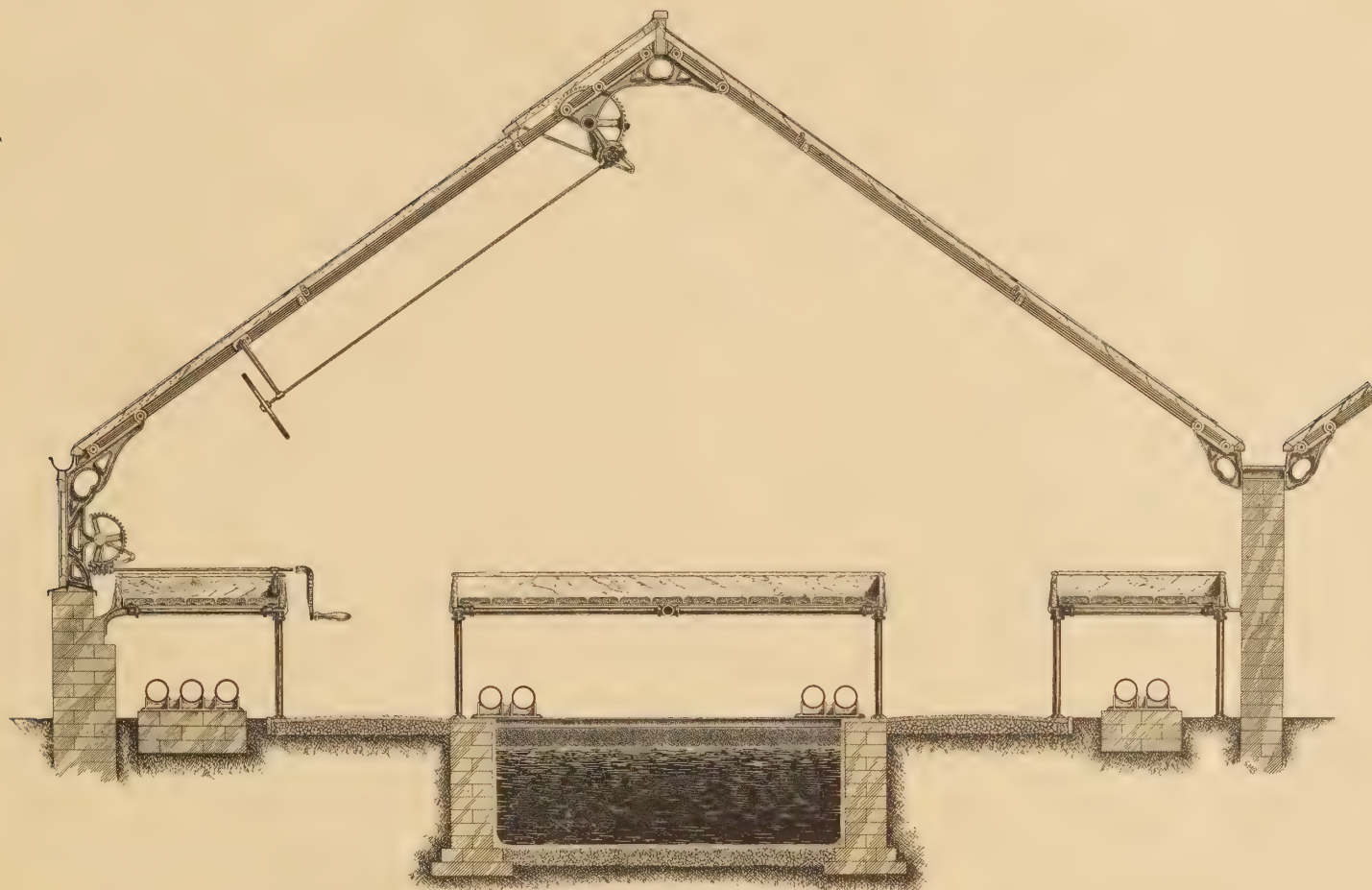
Section of our Standard Curvilinear Three-quarter Span GREENHOUSE on Brick Foundations (19 feet wide), with Sills, Posts, Rafters, Brackets, Purlins and Non-Freezable Gutters, all of Iron. Iron Bench Frames with Tile Bottoms also patent Ventilating Apparatus.



THIS CONSTRUCTION PATENTED MARCH 22, 1892.

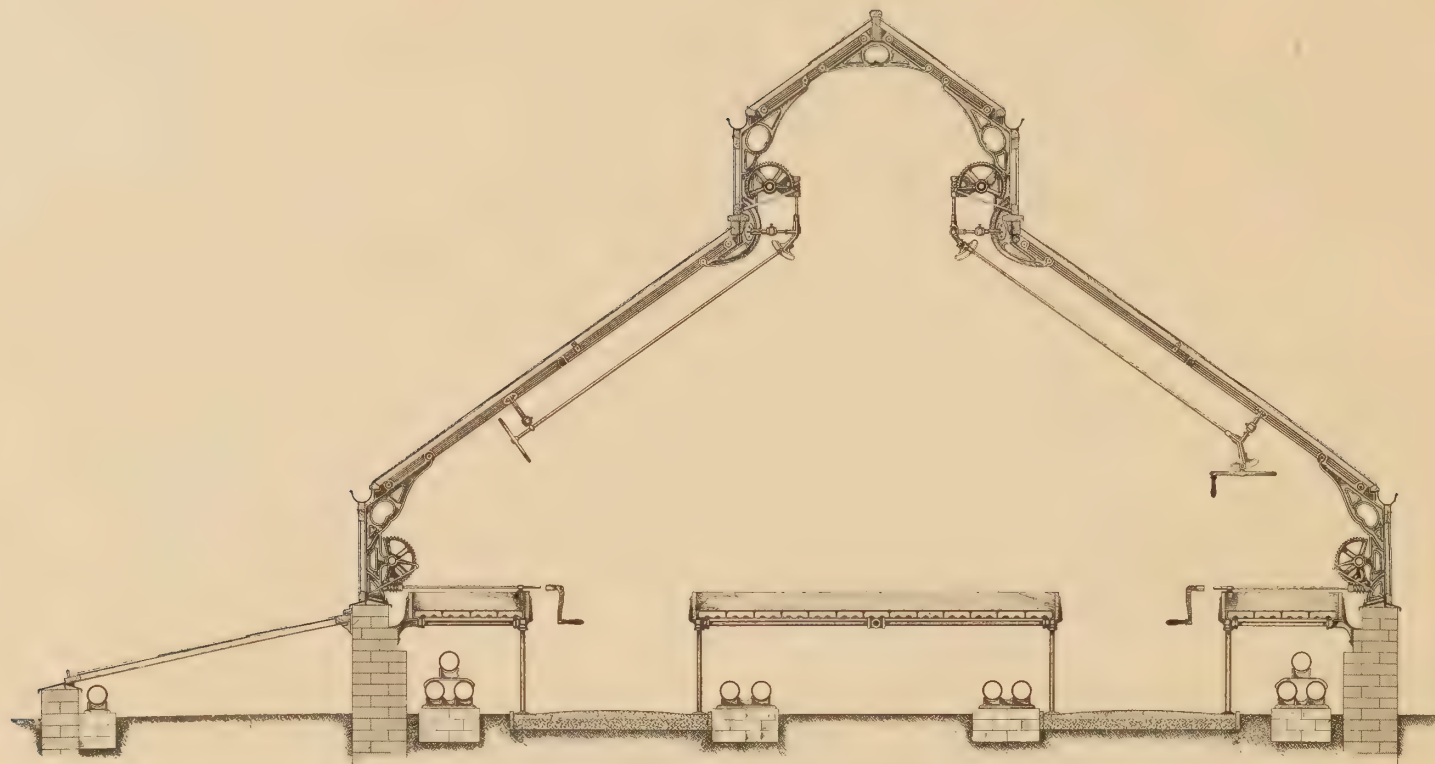
This style of house is well suited for use on private estates for growing Roses or Exhibition Plants requiring full sunlight.





CONSTRUCTION PATENTED MARCH 22, 1892.

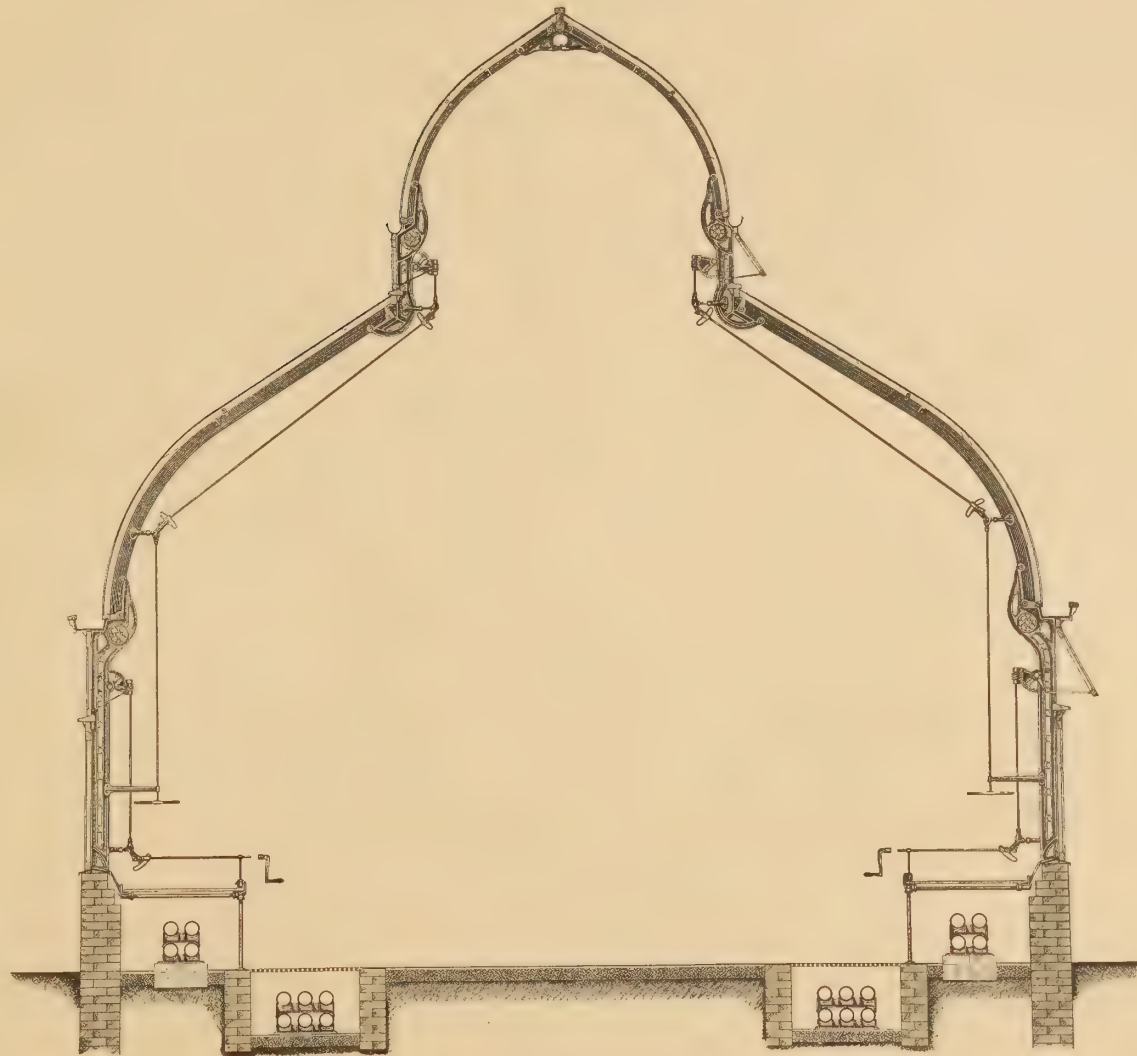
Section of our Standard Even-Span GREENHOUSE on Brick Foundations (19 feet wide), with Sills, Posts, Rafters, Brackets, Purlins and Non-Freezable Gutters, all of Iron. Iron Bench Frames with Tile Bottoms, also Patent Sash-operating Apparatus.



CONSTRUCTION PATENTED MARCH 22, 1892.

Section of our Even-Span GREENHOUSE on Brick Foundations, with Lantern Roof, with Sills, Posts, Rafters, Purlins and Non-Freezable Gutters, all of Iron, with a Vegetable or Violet Frame attached to one side. Iron Bench Frames with Tile Bottoms, also Patent Sash-operating Apparatus.

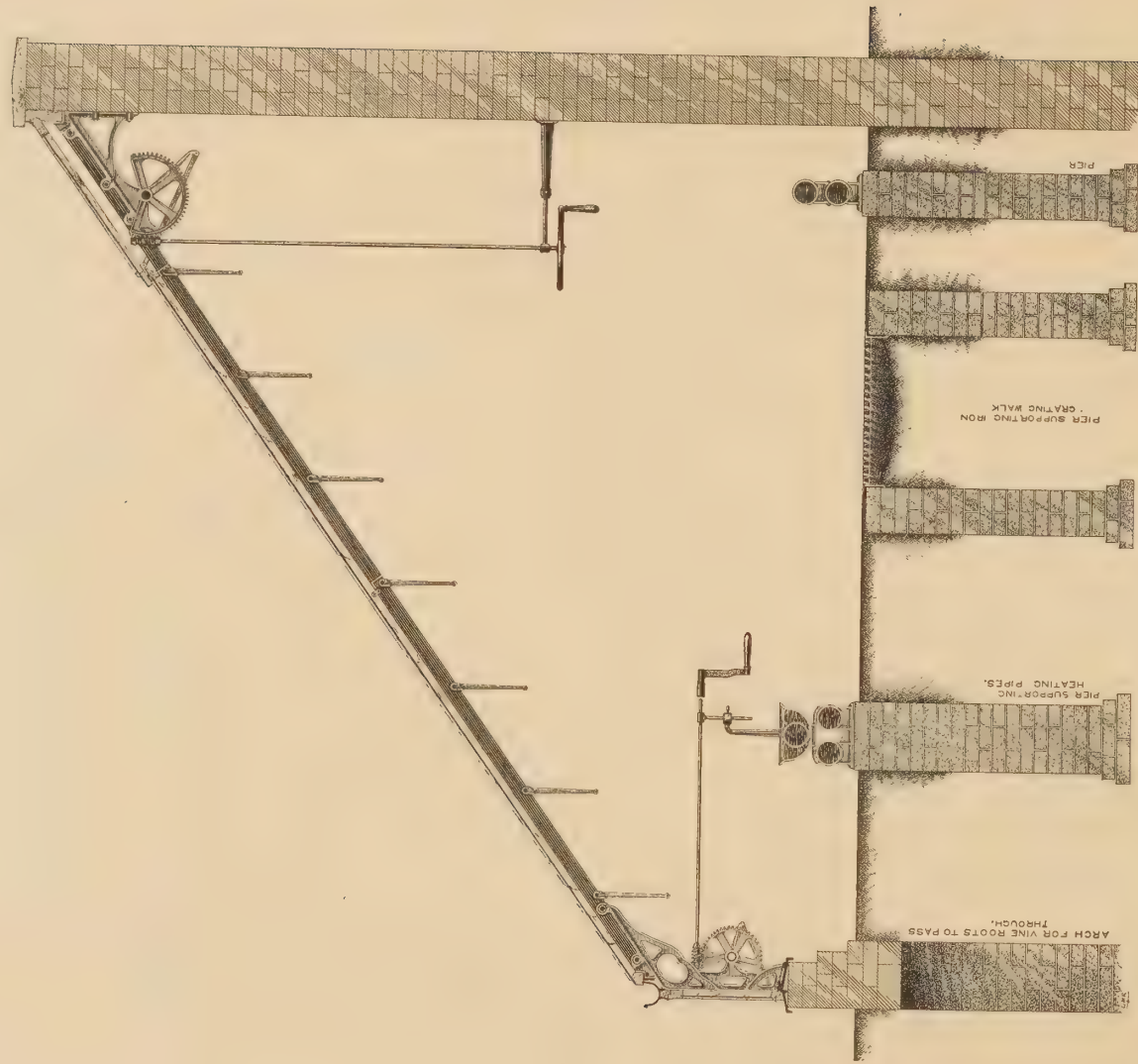
Section of our Even-Span Curvilinear PALM HOUSE, on Brick Foundations, with Curvilinear Lantern Roof, with Sills, Posts, Brackets, Purlins and Non-Freezeable Gutters, all of Iron.



CONSTRUCTION PATENTED MARCH 22, 1892.

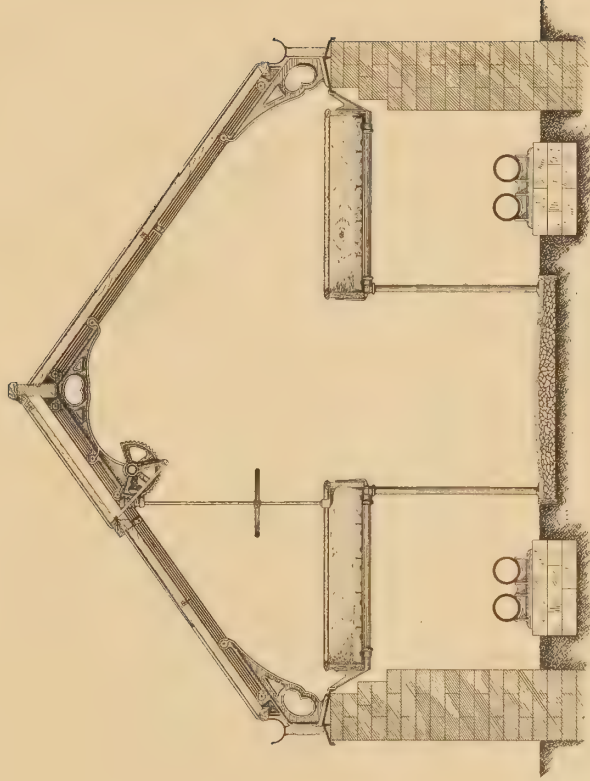
Iron Bench Frames with  $\frac{3}{4}$ -inch thick Planed Slate Bottoms, Cast-Iron Gratings over Trenches, containing Heating Pipes, also Patent Sash-operating Apparatus.



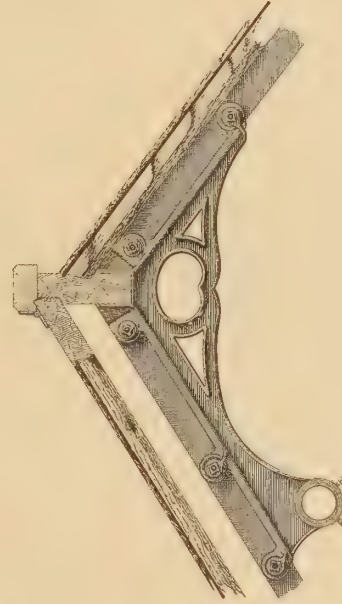


CONSTRUCTION PATENTED MARCH 22, 1892.

Section of our Lean-to GRAPERY or FRUIT HOUSE, on Brick Foundations, with Sills, Posts, Rafters, Brackets, Non-Freezable Gutters, Vine Hangers and Grating Walk, all of Iron, also Patent Sash-operating Apparatus.



Section of our Standard (10 feet wide), GREENHOUSE for Bedding Stock, Vegetables, etc., on Brick Foundations, with Sills, Posts, Rafters, Brackets, Purlins and Non-Freezable Gutters, all of Iron. Iron Bench Frames with Patent Tile Bottoms, also Patent Sash-operating Apparatus.



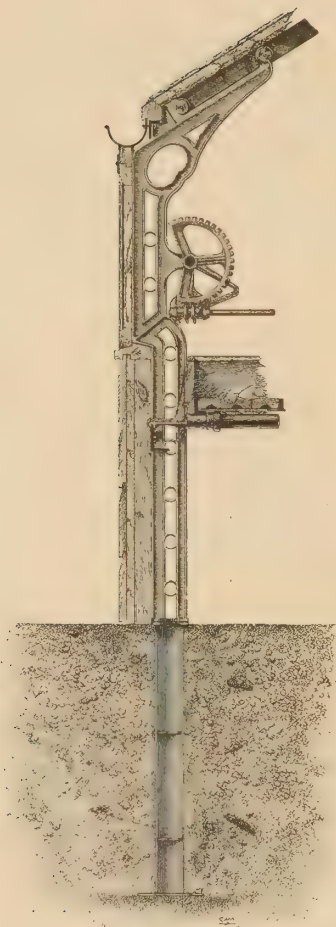
RIDGE BRACKET,

with Bearing for Ventilating Apparatus.



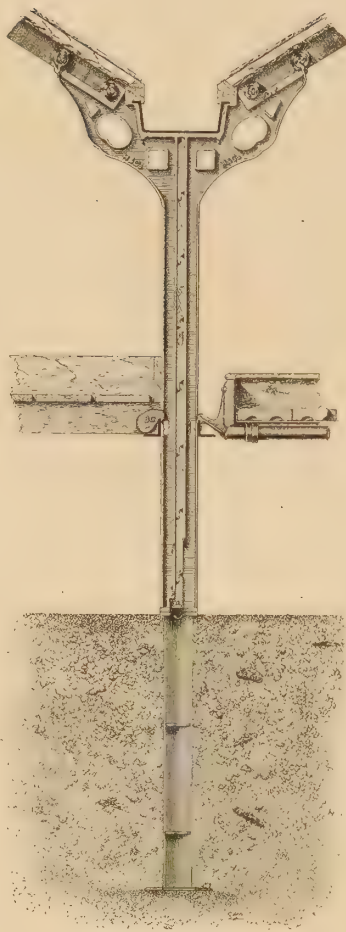
SIDE BRACKET.

DETAILS OF CONSTRUCTION of our IRON ROOF FRAME in connection with Wood Post Houses.



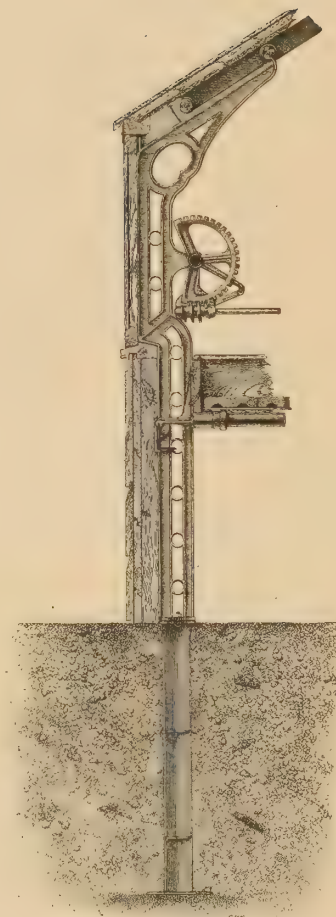
No. 1.

IRON POST arranged for Small Iron Gutter.



No. 2.

IRON POST arranged for Large Furrow Gutter.



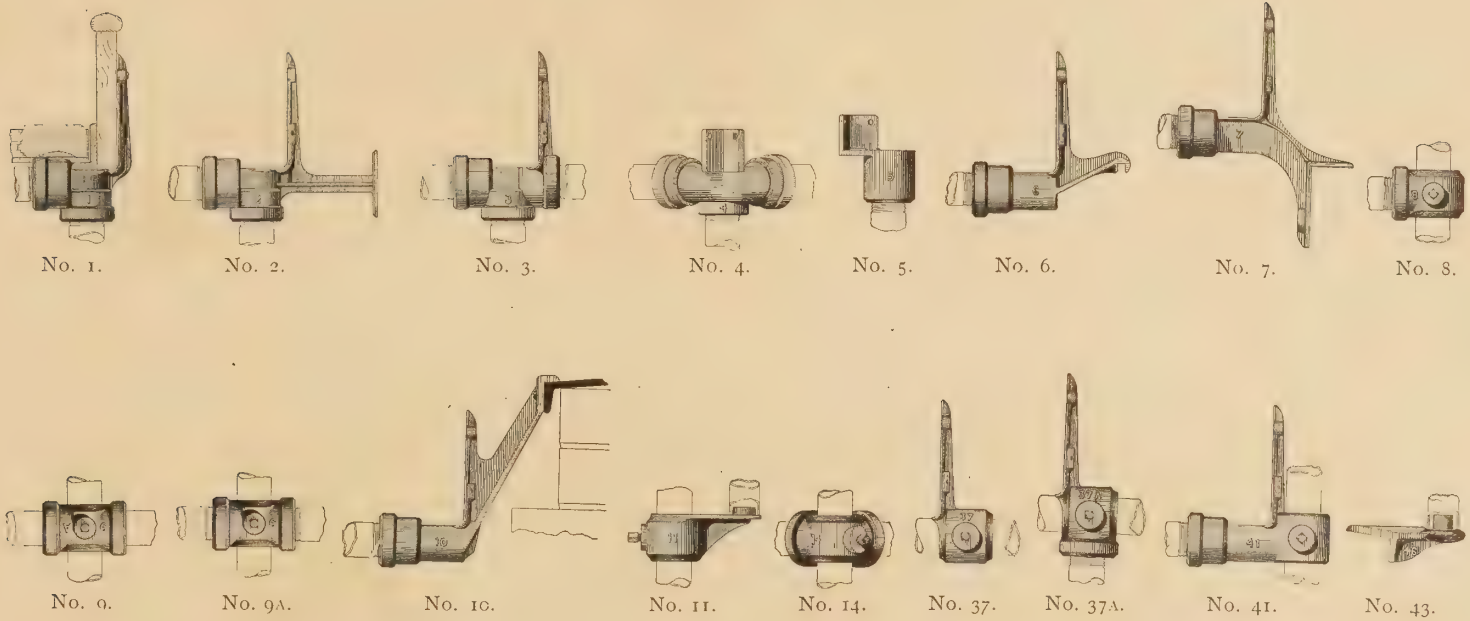
No. 3.

IRON POST arranged for House Without Gutter.

The above Cuts represent our IMPROVED CONSTRUCTION OF POSTS AND THEIR CONNECTIONS.



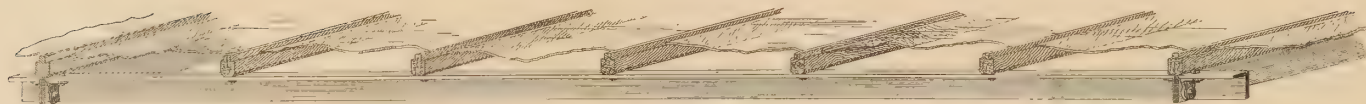
FITTINGS FOR IRON BENCH FRAMES.  
CONSTRUCTED WITH TILE OR OTHER BOTTOMS.



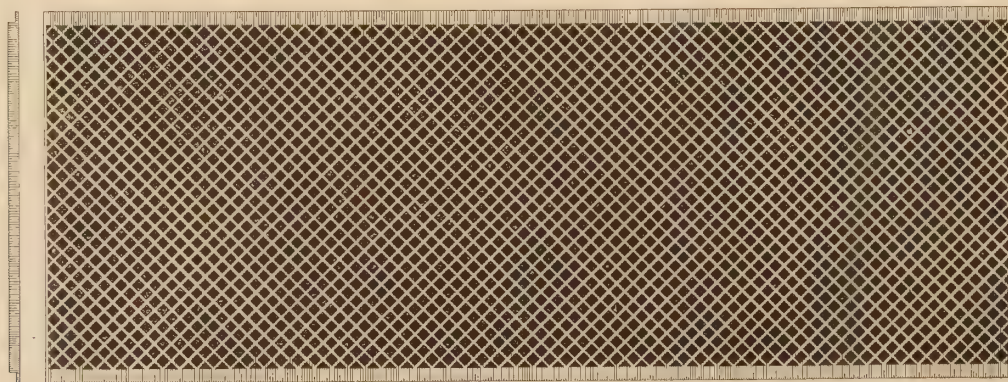
The above illustrated FITTINGS are all Standard, and meet all the requirements of ordinary Benches, either for Even or Three-quarter Span Houses.  
Special Patterns will be made when necessary to meet special conditions.



Our Standard GREENHOUSE CREST, made of Cast-iron in several heights, with suitable finials.  
Other designs are made to suit special conditions.

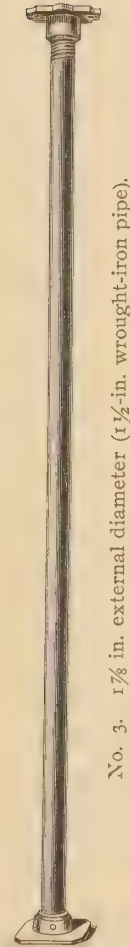
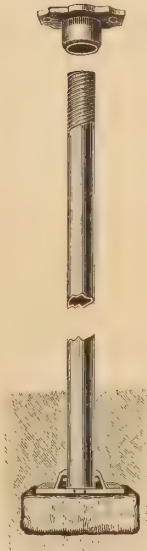
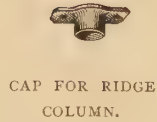
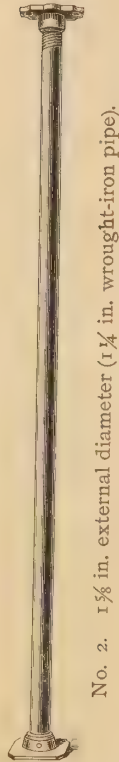


Longitudinal Section of GREENHOUSE ROOF, showing relation between Iron Rafters, Iron Purlins, Wood Glazing Bars and Glass.



Our Standard CAST-IRON GRATINGS for Walks.  
Made of any desired Width or Shape. This Grating is of great strength, weighing 12 lbs. per square foot.

# IRON COLUMNS FOR GREENHOUSE ROOFS.



Each of our Columns is of one piece of pipe only, no short lengths joined by couplings being used. The THREAD at their upper end is cut parallel so as to insure a good fit into the CAP at any point it may be screwed up to, the thread being of sufficient length to allow of ample adjustment.



On the following pages will be found photographic reproductions of a few structures we have lately erected, which may serve as a guide in determining the style or arrangement of houses to be built.



Four of our Standard ROSE HOUSES, with cross connecting house, designed and erected by us in Paterson, N. J.

EVEN-SPAN COMMERCIAL GREENHOUSE.



Designed and erected by us in the East Side Park, at Paterson, N. J.

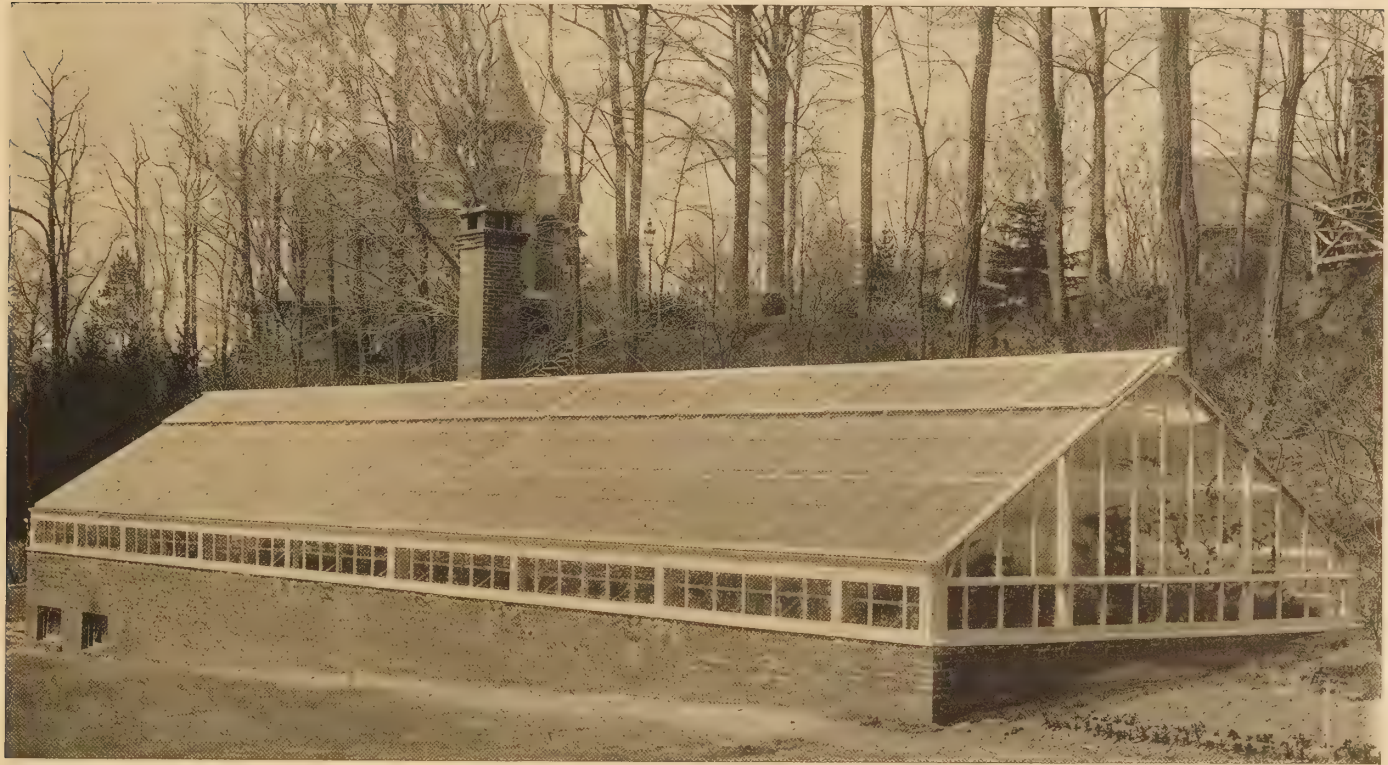
## PALM AND ROSE HOUSES



Range of ROSE HOUSES on Brick Foundation, with central house left in readiness for future extensions,  
designed and erected by us in Morristown, N. J.



EVEN-SPAN GREENHOUSE.

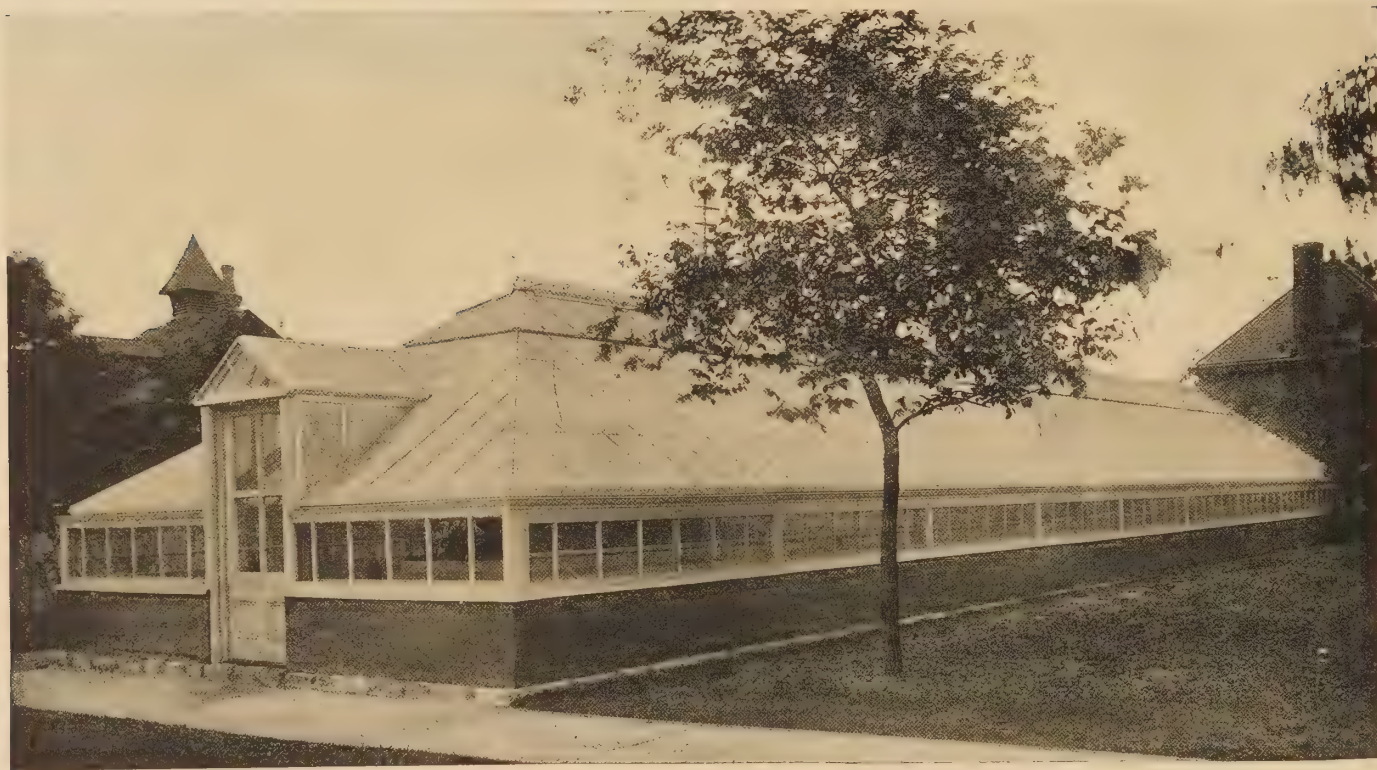


Even-Span GREENHOUSE. on Brick Foundations, designed and erected by us in Sea Cliff, N. Y.

HITCHINGS &amp; CO.,

## EVEN-SPAN GREENHOUSE.

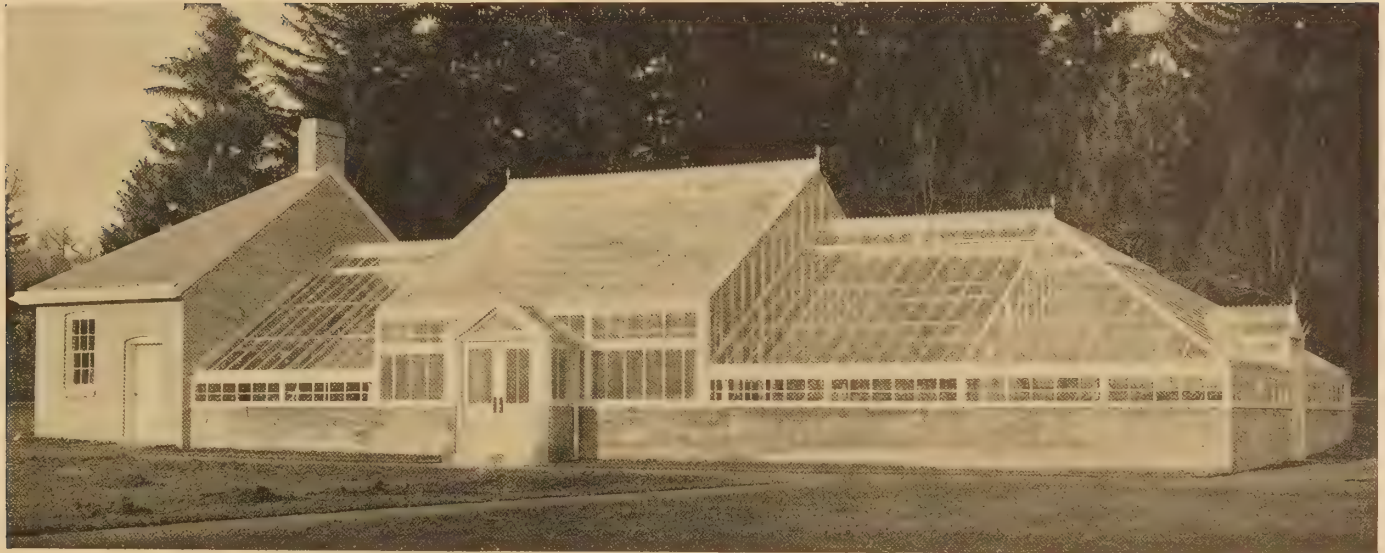
WITH HIPPED END AND GABLE ENTRANCE.



Designed and erected by us in Chicago, Ill. The work room and gardener's cottage are seen at the farther end of the Greenhouse.



EVEN-SPAN PALM AND GREEN HOUSES.



Designed and erected by us at Newburgh, N. Y.



## CURVILINEAR EVEN-SPAN GREENHOUSE.



Designed and erected by us in Morristown, N. J.

The ends of this house are left in readiness for future extensions.

## CURVILINEAR PALM HOUSE AND CONSERVATORIES



Designed and erected by us in Oshkosh, Wis.

## CURVILINEAR PALM AND GREEN HOUSES.



Designed and erected by us in Red Bank, N. J.  
The PALM HOUSE having a Flat Lantern on Roof, and Octagonal Front.



CURVILINEAR PALM HOUSE WITH STRAIGHT-LINE GREEN HOUSES.



Designed and erected by us at Newport, R. I.  
The PALM HOUSE having a Curvilinear Octagonal Lantern.

## CURVILINEAR PALM HOUSE.



Designed and erected by us at Fishkill-on-the Hudson, N. Y. With Octagonal End, and Curvilinear Connecting Wing leading to Dining Room.

## CURVILINEAR PALM HOUSE.

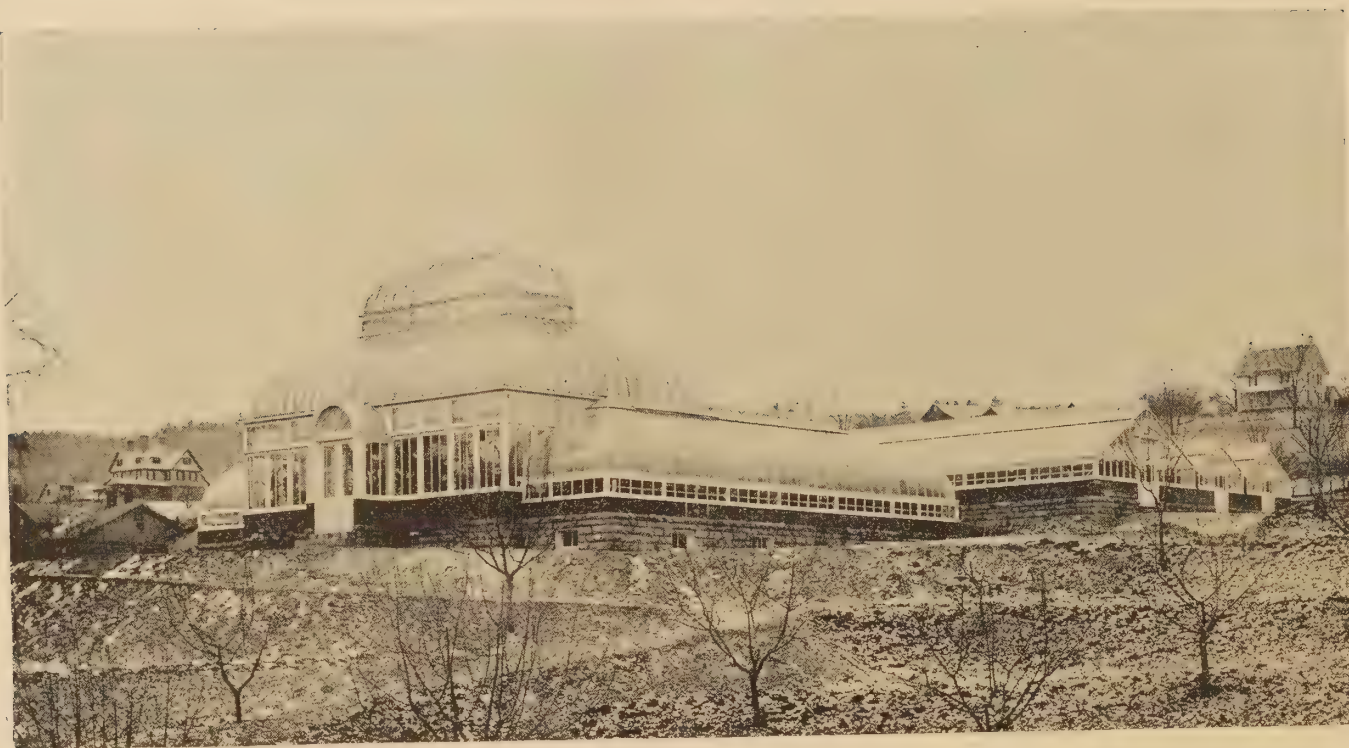


With large Circular-Roofed Entrance and Even-Span GREENHOUSE connected at the rear. This house was designed and erected by us at the World's Fair, and received Four Distinct Awards as follows: For Horticultural Architecture and Construction, Patent Cast-Iron Non-Freezeable Gutters, Iron Bench Frames with Tile Bottoms, and Corrugated Fire-Box Boilers for Greenhouse Heating. This structure has been removed to the eastern entrance of Greenwood Cemetery, where, by the courtesy of its present owners, Messrs. Jas. Weir, Jr., & Son, it may be inspected by persons interested.



## RANGE OF PALM AND GREEN HOUSES.

(FRONT VIEW.)



Designed and erected by us at Watkins, N. Y.

This is one of the most compact and perfectly constructed ranges of private glass erected in this country ; it consists of Curvilinear PALM HOUSE, CONSERVATORY, ROSE, STORE and COOL HOUSES and large work room, and Straight-Line GREEN, VEGETABLE, CARNATION and VIOLET HOUSES.

RANGE OF PALM AND GREEN HOUSES.

(SIDE VIEW.)



Designed and erected by us at Watkins, N. Y.

## EVEN-SPAN CURVILINEAR GREENHOUSE.

WITH THE ROOF OF THE CENTRE DIVISION ELEVATED FOR THE ACCOMMODATION  
OF PALMS AND LARGE PLANTS.

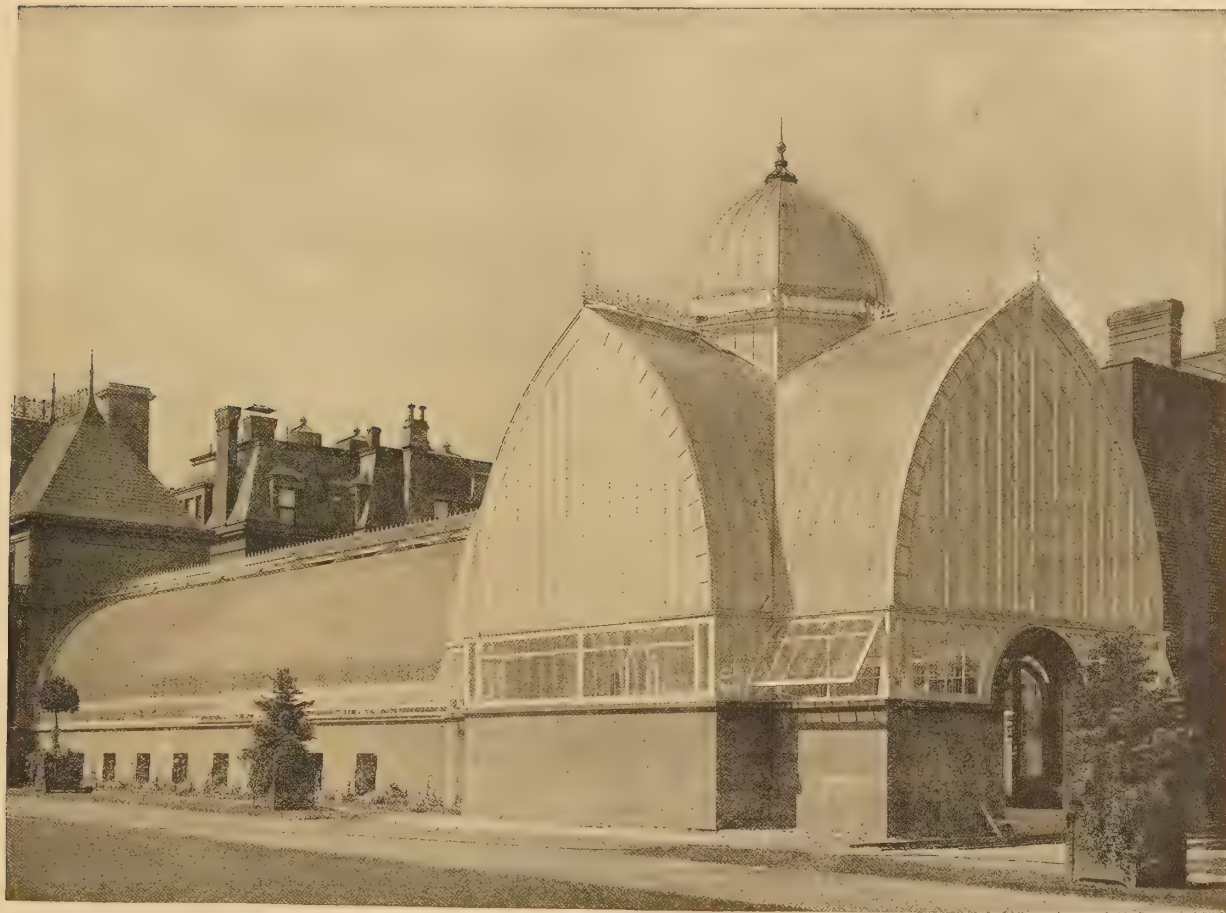


Designed and erected by us at Somerville, N. J.

This style of house is particularly well adapted for small Private Grounds, being ornamental without sacrificing any of the practical features of the Commercial House. It may be divided into two or more compartments, for the growing of plants requiring different temperatures.



CURVILINEAR PALM AND GREEN HOUSES.



Designed and erected by us in Chicago, Ill.

## RANGE OF PALM AND GREEN HOUSES.

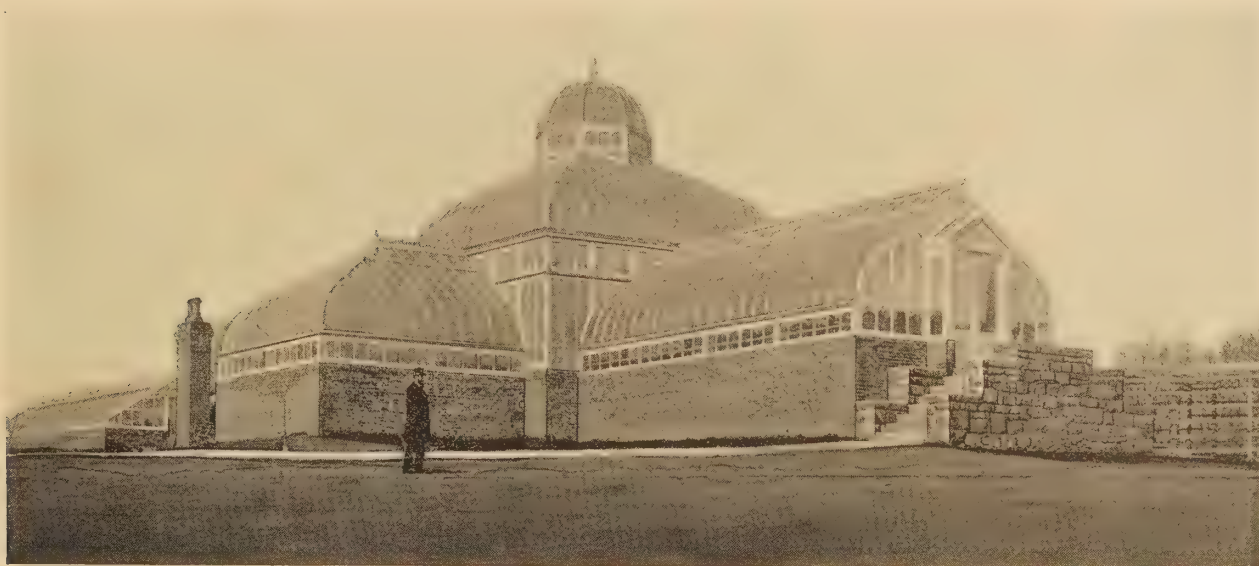


Designed and erected by us in Ambler, Pa.

This range consists of PALM HOUSE, four Even-Span Ridge and Furrow GREENHOUSES, one Three-quarter Span ROSE HOUSE and large work room.

## RANGE OF PALM AND GREEN HOUSES.

(OCTAGONAL CURVILINEAR LANTERN ON PALM HOUSE.)



Designed and erected by us in Bernardsville, N. J.

This range consists of PALM HOUSE, CONSERVATORY, ROSE, GREEN, STOVE, PROPAGATING and VEGETABLE HOUSES, also a COMBINATION CONSERVATORY and SMOKING ROOM.



## CURVILINEAR PALM AND PLANT HOUSES.



Designed and erected by us in North Easton, Mass.

The PALM HOUSE having an Octagonal Front and Curvilinear Lantern on Roof. We also constructed GRAPERY, PEACH and VEGETABLE HOUSES in the rear of the above illustrated houses.

## PALM AND GREEN HOUSES



Designed and erected by us in Newport, R. I.

Consisting of PALM, GREEN and FRUIT HOUSES, and large potting shed at the rear,



HITCHINGS & CO.,  
CONSERVATORY ATTACHED TO DWELLING.



Designed and erected by us at Newton, N. J.



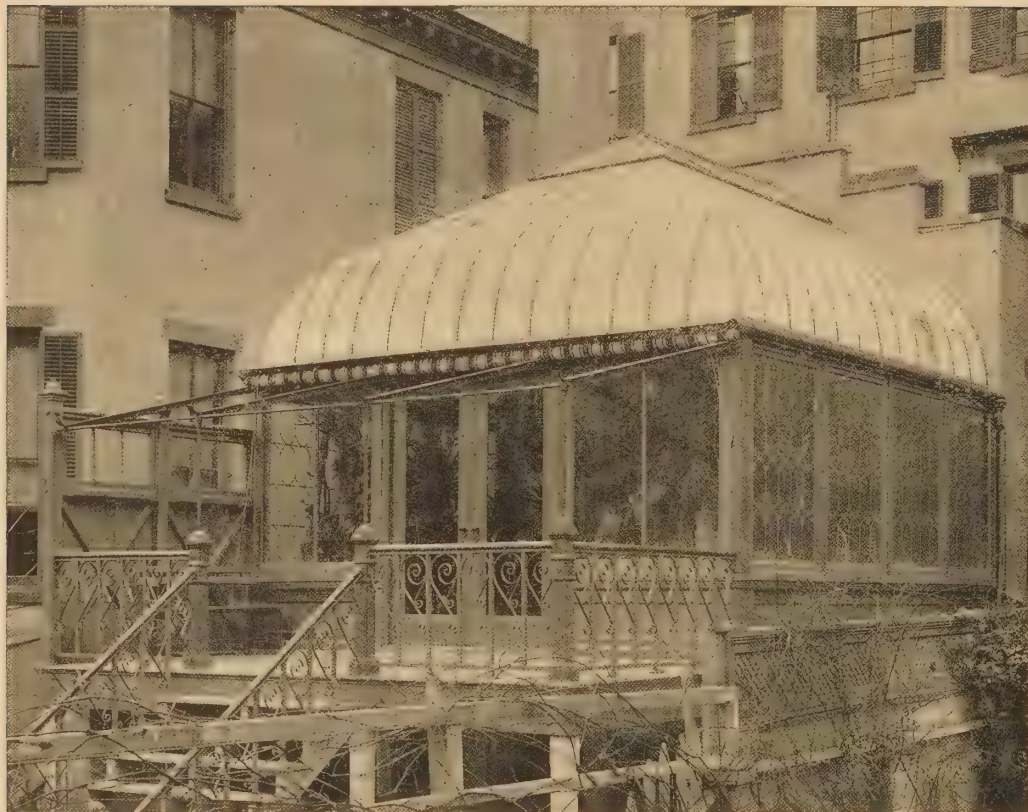
COMMERCIAL GREENHOUSE.  
WITH STORE AND OFFICE ATTACHED.



Designed and erected by us at Danvers, Mass.

## CURVILINEAR CONSERVATORY.

(WITH HIPPED END).



Designed and erected by us in Brooklyn, N. Y.

CURVILINEAR CONSERVATORY (WITH CIRCULAR END).



Designed and erected by us in Brooklyn, N. Y.



## INTERIOR OF VIOLET OR PROPAGATING HOUSE.



With Cement Walk and Iron Bench Frames with Tile Bottoms.

INTERIOR OF GREENHOUSE.



With Wood Slat Walks and Iron Bench Frames with Wood Bottoms.



HITCHINGS & CO.,  
INTERIOR OF VEGETABLE HOUSES



With Iron Bench Frames with Tile Bottoms. The central bench of the nearer house being used for tomatoes, and the others for smaller vegetables and salads.



INTERIOR OF GREENHOUSE.



Used also as Smoking-room. The floor is of cement, and the partition at far end, between greenhouse and potting-room, is glazed with mirrored glass.

## INTERIOR OF SEMI-CIRCULAR CONSERVATORY.



With Iron and Slate Benches and Cement Floor.



INTERIOR OF CURVILINEAR PALM HOUSE.



With Iron Grating Walks, Iron and Slate Benches, etc.



INTERIOR OF CURVILINEAR PALM HOUSE.  
(WITH LANTERN ROOF).

50

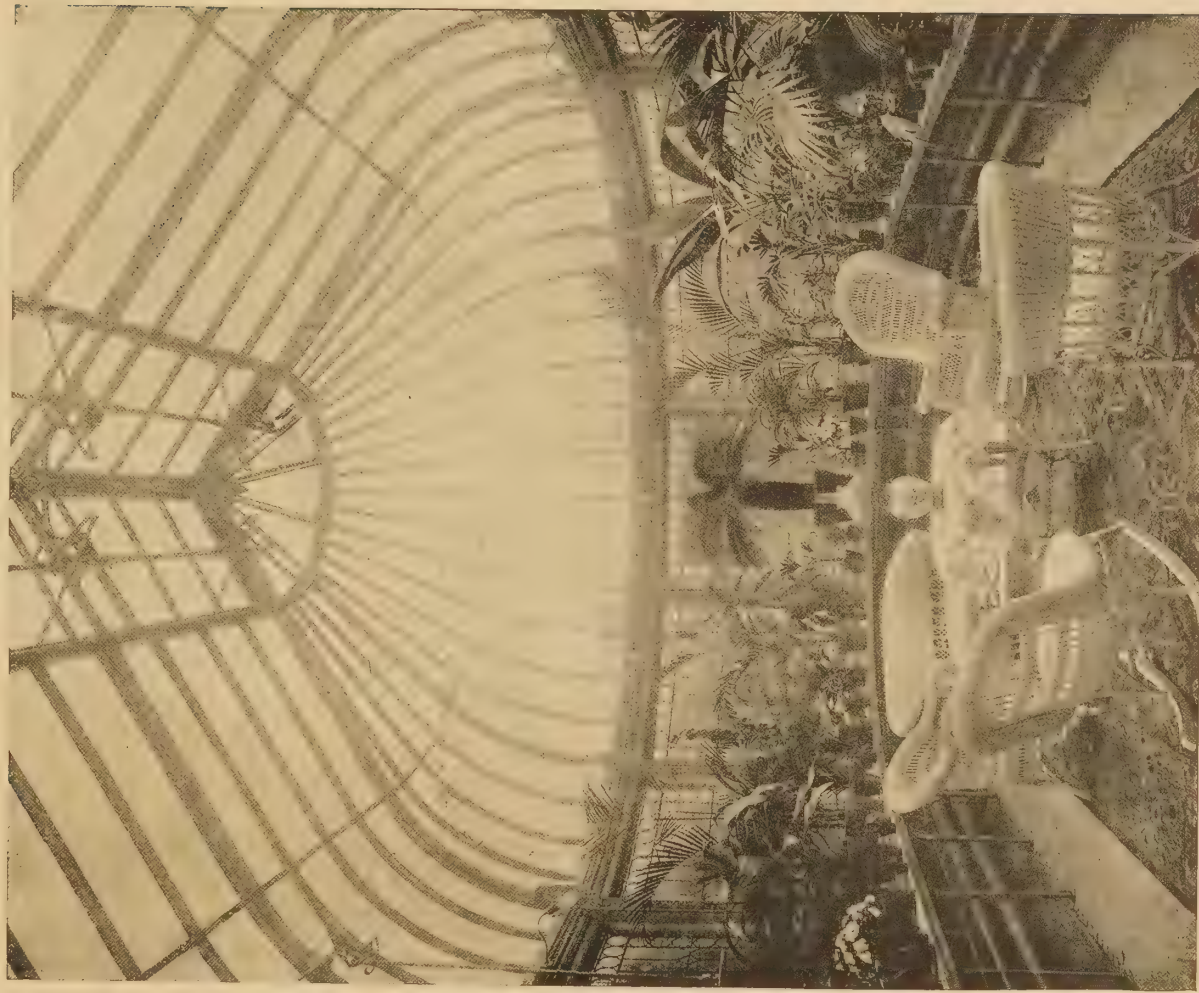
HITCHINGS & CO.,



Iron and Slate Benches, Iron Grating Walks and Cement Floor.  
Designed and erected by us at Watkins, N. Y.

INTERIOR OF CURVILINEAR CONSERVATORY  
(WITH CIRCULAR END).

233 MERCER STREET, NEW YORK.



Iron and Slate Benches and Mosaic Floor.

Designed and erected by us in Brooklyn, N. Y.



INTERIOR OF LIGHT AND AIR SHAFT  
COVERED BY OUR STANDARD IRON FRAME ROOF.

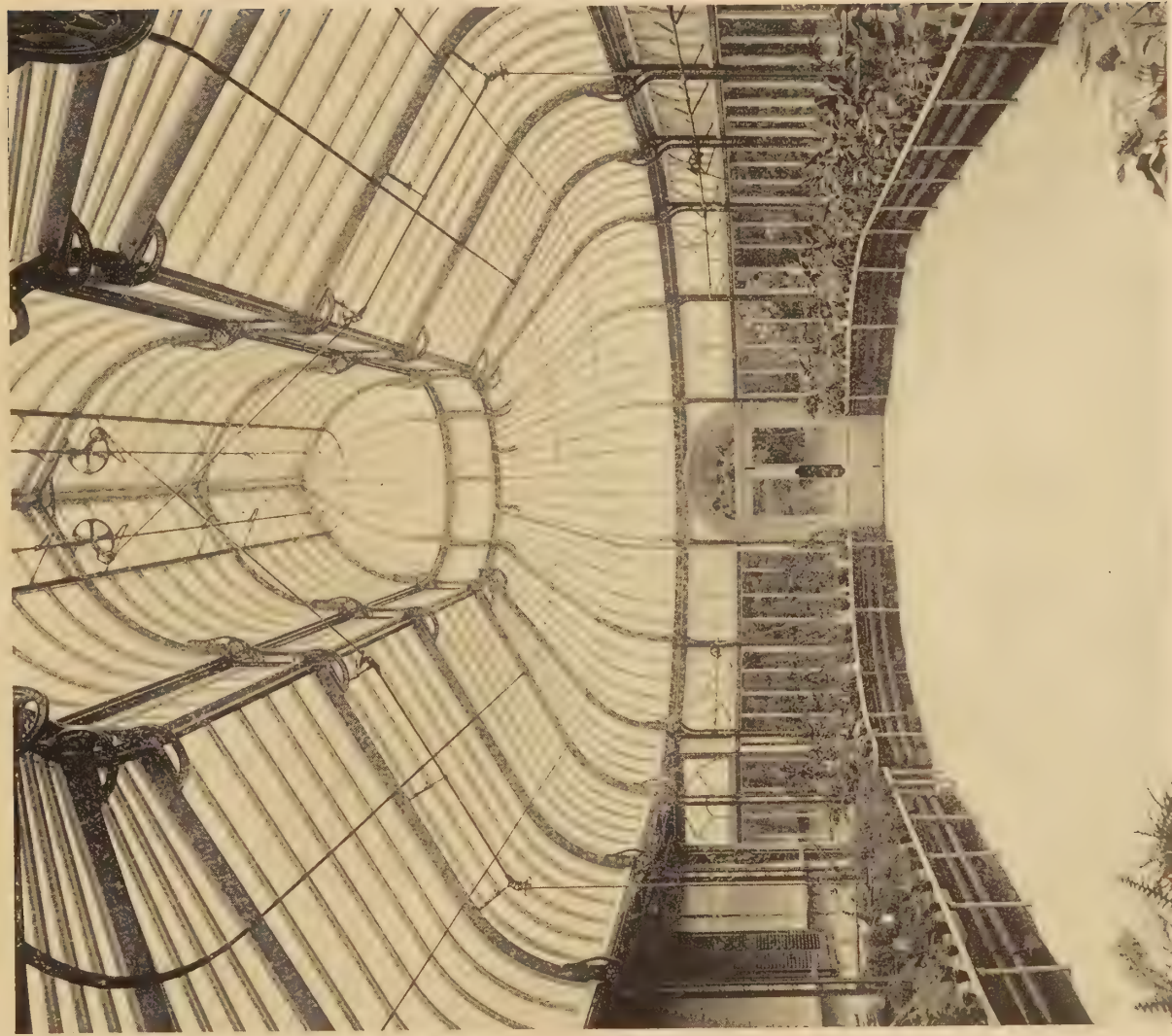


HITCHINGS & CO.,

Designed and erected by us in Englewood, N. J.



INTERIOR OF CIRCULAR-END, CURVILINEAR  
CONSERVATORY.



233 MERCER STREET, NEW YORK.

Designed and erected by us in Northampton, Mass

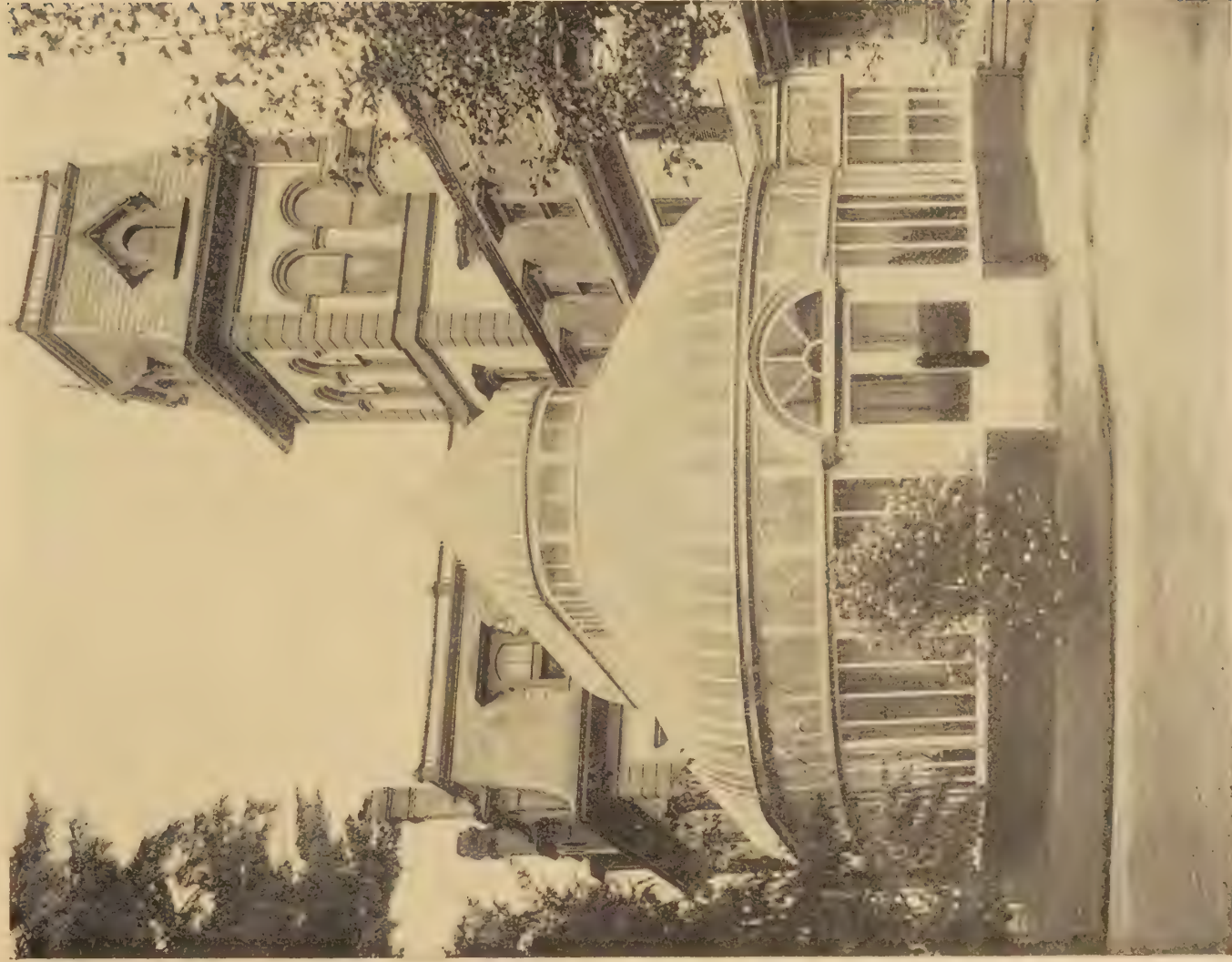
## SIDE ELEVATION OF CIRCULAR-END CURVILINEAR CONSERVATORY.



Designed and erected by us in Northampton, Mass.



END ELEVATION OF CIRCULAR-END, CURVILINEAR CONSERVATORY.



233 MERCER STREET, NEW YORK.



## CONSERVATORY,

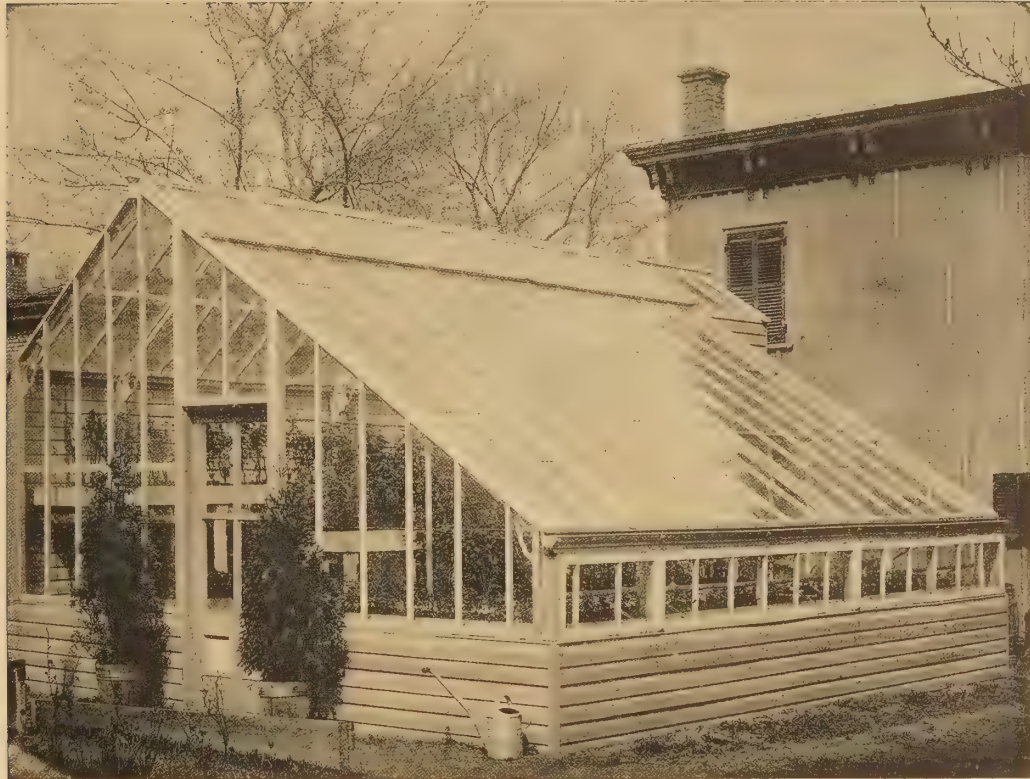
WITH GLAZED BASEMENT FOR STORAGE OF PLANTS.

HITCHINGS & CO.,



Designed and erected by us in Newark, N. J.

AMATEUR ROSE HOUSE.



Designed and erected by us in Brooklyn, N. Y.

## SMALL GREENHOUSE ATTACHED TO STABLE.



Designed and erected by us in Orange, N. J.

This GREENHOUSE is heated by our Hot-Water System, which also heats, in connection with the same, the Carriage and Harness Rooms and Coachman's Apartments.



SMALL GREENHOUSE ATTACHED TO STABLE.



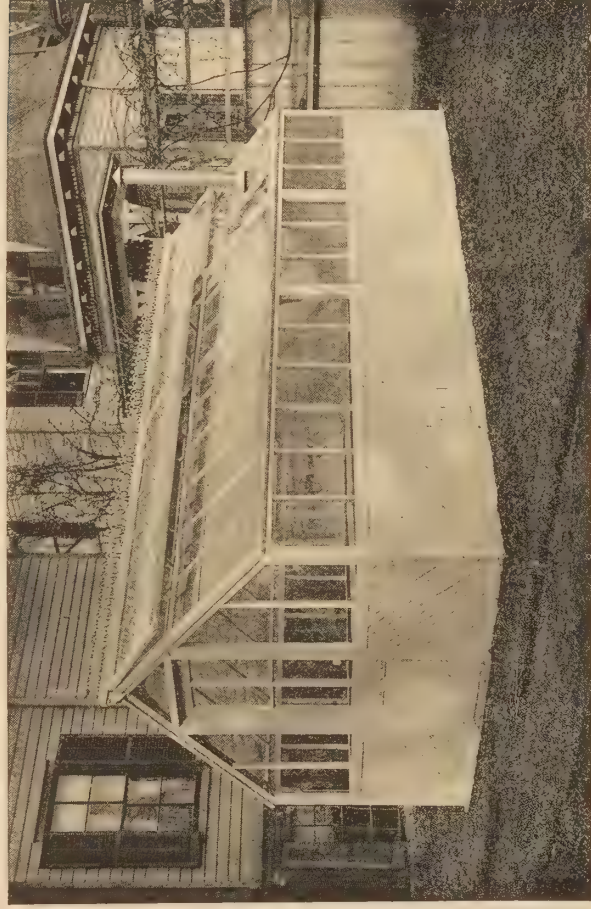
Designed and erected by us in Bay Side, N. Y.

This GREENHOUSE is heated by our Hot-Water System, which also heats, in connection with the same, the Carriage and Harness Rooms and Coachman's Apartments.

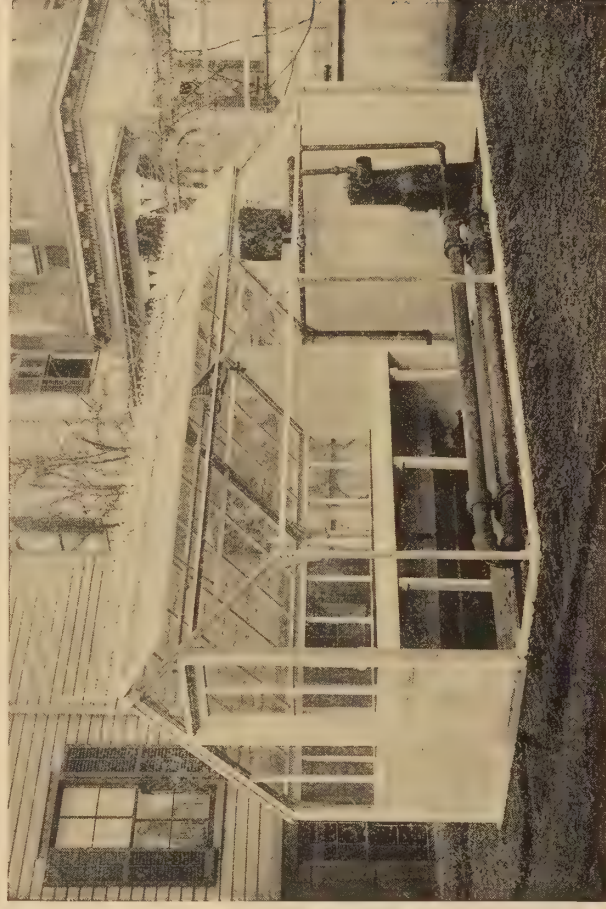
AMATEUR PORTABLE GREENHOUSE.  
IRON FRAME CONSTRUCTION.

60

HITCHINGS & CO.,



PORTABLE GREENHOUSE, 17 FEET BY 9 FEET 6 INCHES.



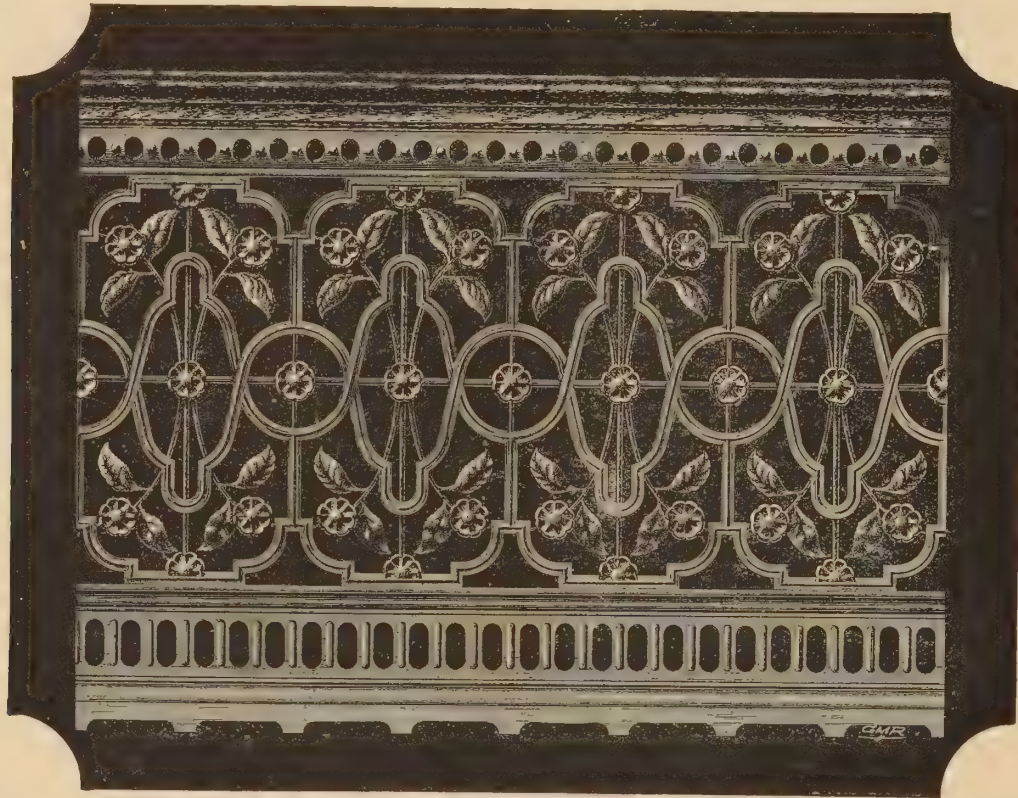
PORTABLE GREENHOUSE WITH ONE SIDE AND PART OF ROOF AND PARTITION REMOVED TO SHOW  
THE ARRANGEMENT OF THE HEATING AND VENTILATING APPARATUS.  
Description given on next page.

THE AMATEUR PORTABLE GREENHOUSE, illustrated on the preceding page, is 17 feet long and 9 feet 6 inches wide. It is so constructed that it can be easily extended in length, when desired, by removing the Front End and inserting another section 8 feet 4½ inches long; the End is then put back in place by means of screws and bolts. The extensions to the Heating and Ventilating Apparatus, Benches and Slat Walk are also easily made. The Posts, Rafters, Purlins and Brackets are of Iron. The Sides, Ends, and Roof are made up in Sections, as are also the Benches, Slat Walk, and Partition which separates the Heating Room from Plant Room. The woodwork is painted two coats of Atlantic White Lead. The Glass is double thick, 16 x 24 inches. The Roof Sash is operated by our Patent Ventilating Apparatus. The Heating Apparatus consists of one of our No. 21 Base-Burning Heaters and a small square Cast-Iron Expansion Tank, which are located in the Room (4 feet by 9 feet 6 inches), which is partitioned off for that purpose. The small 1¼ Pipes which lead to and from the Heater are cut to measure and ready to be screwed together. The Heating Pipes are of our standard pattern—9 feet long and 4 inches external diameter. These are also cut to proper length.

The total cost of the House described above is \$350, f. o. b. in New York.



In Palm Houses and Conservatories it is often desirable to screen from sight the Heating Pipes and other apparatus which may be under the benches or tables; for this purpose we recommend the CAST-IRON



GRILL shown by the cut above, which, while being an effective screen, adds materially to the finished appearance of the structure, and yet is of a sufficiently open pattern to admit of a free circulation of the warmth radiated by the Heating Pipes.

The following are the names of a few of our later patrons for whom we have done Structural Work, and to whom we cheerfully refer prospective customers; for references relative to Heating Work only, see last pages of Heating Catalogue.

RICHARD M. HUNT,	Metropolitan Building, New York.	OAKLEIGH THORNE,	Millbrook, N. Y.
D'OENCH & SIMON,	289 Fourth Avenue, New York.	CHAS. F. DIETRICH,	Millbrook, N. Y.
J. T. HALL & CO.,	160 Fifth Avenue, New York.	J. J. ZIMMERMAN,	Troy, N. Y.
JORDAN & GILLER,	Park Place, New York.	T. STREATFIELD CLARKSON,	Potsdam, N. Y.
WILLIAM P. CHESLEY,	Central Building, New York.	NEW YORK CATHOLIC PROTECTORY,	Van Nest, N. Y.
W. H. DAY,	Metropolitan Building, New York.	L. MENAND,	Albany, N. Y.
ELBRIDGE T. GERRY,	Fifth Avenue and 61st Street, New York.	J. F. ANDERSON,	Whitestone, L. I., N. Y.
R. ERBSLOH,	52 Remsen Street, Brooklyn, N. Y.	LOUIS DU PUY,	Whitestone, L. I., N. Y.
T. J. DAVIS,	589 St. Mark's Avenue, Brooklyn, N. Y.	OSCAR WENIGE,	Whitestone, L. I., N. Y.
JAS. WEIR, JR., & SON,	25th Street and Fifth Avenue, Brooklyn, N. Y.	DAILLEDOUTZE BROS.,	Flatbush, L. I., N. Y.
H. E. NESMITH,	265 Washington Avenue, Brooklyn, N. Y.	GEO. T. BERGEN,	Mattituck, L. I., N. Y.
GUIDO PLEISSNER,	Plaza and Lincoln Place, Brooklyn, N. Y.	J. E. BROWN,	Bellport, L. I., N. Y.
HENRY HOFFMAN,	Linden Boulevard, Brooklyn, N. Y.	L. A. FISH,	Greenport, L. I., N. Y.
WINTHROP SARGENT,	Fishkill-on-Hudson, N. Y.	J. W. MASURY,	Moriches, L. I., N. Y.
W. W. LAW,	Scarboro, N. Y.	J. S. PARKS,	Patchogue, L. I., N. Y.
JOHN A. MORRIS,	Westchester, N. Y.	C. A. GOULD,	Bayside, L. I., N. Y.
JOHN A. ROOSEVELT,	Poughkeepsie, N. Y.	HENRY F. COOK,	Sag Harbor, L. I., N. Y.
C. H. LILLIENTHAL,	Yonkers, N. Y.	S. B. PARSONS,	Flushing, L. I., N. Y.
GENERAL G. J. MAGEE,	Watkins, N. Y.	AUG. BELMONT,	Hempstead, L. I., N. Y.
FRANK W. HOYT,	Watkins, N. Y.	ANTON SCHULTHEIS,	College Point, L. I., N. Y.
WARREN DELANO,	Newburgh, N. Y.	J. A. SUYDAM,	Kowenhoven, L. I., N. Y.
F. L. NORTON,	Cazenovia, N. Y.	HENRY F. NOYES,	Glen Cove, L. I., N. Y.
HENRY BURDEN,	Cazenovia, N. Y.	CHAS. H. DITSON,	Babylon, L. I., N. Y.
W. B. WHEELER,	Pawling, N. Y.	C. L. TAPPIN,	Babylon, L. I., N. Y.
W. C. GOODRICH,	West Troy, N. Y.	F. P. OLCOTT,	Bernardsville, N. J.
DR. H. D. NOYES,	New Rochelle, N. Y.	GEO. McCULLOCH MILLER,	Morristown, N. J.
ELMER T. BUTLER,	Tottenville, N. Y.	G. G. FRELINGHUYSEN,	Morristown, N. J.
COMMANDING OFFICER,	Governor's Island, N. Y.	W. S. HERRIMAN,	Morristown, N. J.
GEO. T. SAMBROOK,	Troy, N. Y.	GUSTAVE KISSELL,	Morristown, N. J.
AUGUST STUMPP,	New Brighton, N. Y.	DR. J. HUMPHREYS,	Morristown, N. J.
GEO. REDMOND,	Tivoli, N. Y.	MRS. WM. MILLS,	Asbury Park, N. J.
M. L. HINMAN,	Dunkirk, N. Y.	GEO. YOUNG,	Clifton, N. J.
SAMUEL THORNE,	Millbrook, N. Y.	W. A. ROEBLING,	Trenton, N. J.
WM. ROCKEFELLER,	Tarrytown, N. Y.	W. P. WIGHT,	Madison, N. J.

L. ST. CLAIR COLBY,	E. Orange, N. J.	R. & J. FARQUHAR & Co.,	Boston, Mass.
DR. EMLÉN PHYSICK,	Cape May, N. J.	MRS. F. L. AMES,	North Easton, Mass.
CEDAR LAWN CEMETERY,	Paterson, N. J.	B. F. DORRANCE,	Wilkesbarre, Pa.
PATERSON PARK COMMISSIONERS,	Paterson, N. J.	D. H. PEARSALL,	Brownsville, Pa.
JOS. TOWELL,	Paterson, N. J.	C. W. BERGNER,	Ambler, Pa.
SOLOMON LOEB,	Red Bank, N. J.	ROBERT WETHERELL,	Chester, Pa.
ERNEST ASMUS,	West Hoboken, N. J.	MRS. E. L. FARNUM,	Media, Pa.
HENRY W. MERRIAM,	Newton, N. J.	E. J. MATTHEWS,	Valley Forge, Pa.
MRS. S. P. ADAMS,	Newton, N. J.	E. A. SCHMIDT,	Radnor, Pa.
G. B. SCHLEY,	Far Hills, N. J.	J. T. MORRIS,	Chestnut Hill, Pa.
THOS. K. PEMBROKE,	Elizabeth, N. J.	J. C. SIMS,	Wyndmoor, Pa.
WM. KRAFT,	Johnson Avenue, Newark, N. J.	HOWARD RINEK,	Easton, Pa.
CARL F. REHMAN,	756 Broad Street, Newark, N. J.	W. H. TYNDALL,	Galveston, Tex.
GEO. BROWN,	Mt. Prospect Avenue, Newark, N. J.	MRS. R. S. WILLIS,	Galveston, Tex.
CEMETERY OF THE HOLY NAME,	Jersey City, N. J.	GEO. W. VANDERBILT,	Biltmore, N. C.
WM. CRAIG,	Englewood, N. J.	E. P. SAWYER,	Oshkosh, Wis.
MRS. E. A. GAMMELL,	Newport, R. I.	S. S. BEMAN,	Chicago, Ill.
E. I. BERWIND,	Newport, R. I.	GEO. M. PULLMAN,	Chicago, Ill.
W. F. BURDEN,	Newport, R. I.	C. H. MORSE,	Chicago, Ill.
OGDEN GOELET,	Newport, R. I.	S. L. GRIFFITH,	Danby, Vermont.
MAJOR T. K. GIBBS,	Newport, R. I.	HON. WILLIAM M. EVARTS,	Windsor, Vermont.
WM. HODGKINSON,	Bristol, R. I.	WM. DUPONT,	Wilmington, Del.
COLONEL R. H. GODDARD,	Providence R. I.	HON. STEPHEN B. ELKINS,	Elkins, W. Va.
JAMES HORAN,	Bridgeport, Conn.	D. C. DODGE,	Denver, Col.
A. N. PIERSON,	Cromwell, Conn.	J. A. THATCHER,	Pueblo, Col.
WM. SLACK,	Stamford, Conn.	M. D. THATCHER,	Pueblo, Col.
A. F. WHITIN,	Whitinsville, Mass.	MRS. CATHARINE PARIS,	Charlestown, N. H.
E. H. R. LYMAN,	Northampton, Mass.	W. A. CHALFANTE,	Springfield, Mo.
A. C. HOUGHTON,	North Adams, Mass.	E. L. MILLS,	New Hope, Ky.
E. & C. WOODMAN,	Danvers, Mass.		





GREENHOUSE HEATING AND VENTILATING.

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ESTABLISHED 1844.

**HITCHINGS & CO.,**

233 MERCER STREET,

NEW YORK.

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HORTICULTURAL ARCHITECTURE AND BUILDING.

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GREENHOUSE HEATING AND VENTILATING CATALOGUE ON APPLICATION.







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